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For the Uſe and Benefit of

TRADES-MEN.

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both *Vulgar* and *Decimal*, are Taught
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To the Right Honourable 1834

Sir *William Aſhhurſt*, Knt.

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City of *LONDON*,

This Manual of

Practical Arithmetick,

Is humbly dedicated
and preſented by your
Lordſhip's moſt obliged
humble Servant,

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The PEEFACE.

THIS *Manual of* Practical Arithmetick, *adapted chiefly for the* Benefit *and* Uſe *of* Tradeſmen, *is the Product of ſome vacant Hours. A* Work *for its Nature and Kind* differing *from any Thing heretofore Publiſhed that I know of: All the* Rules *being made* plain *and* eaſie *to the* meaneſt Capacities, *for whoſe Sakes it is principally intended: Which is the Reaſon ſo much of the* Book *is taken up in* Explaining *and* Teaching *the* Ground-work, *viz.* Addition, Subtraction, Multiplication *and* Diviſion, *which moſt Arithmetick Books are deficient in; a Defect in any of thoſe Rules will render the Labours of ſuch as learn Arithmetick by Books very difficult and hard. To help which, I have firſt of all laid down the* plaineſt Way of Diviſion *for a Learner that wants the help of a Maſter, and afterwards have given the* ſhorteſt Italian Way of Diviſion. *I have alſo omitted ſeveral Rules that are not of much Vſe in Trade, ſuch as* Alligation, Barter, Loſs *and* Gain, Company with Time, *&c. And have ſupplied thoſe Omiſſions with what is more uſual and Practical,* viz. *Great Enlargements, and Variety of the Golden Rule of Three, the Rule of Three Inverſe, Double Rule of Three, and the Vſe of the Compound Rule of* Five Numbers *in working Intereſt, and the Nature of Exchange, Rules of Practice, with great Variety, and* ſhort Ways *to caſt up* Merchandize. *The Order of* Deducting Tare *and* Tret, *with other Rules Vſeful in Trade.* Laſtly, *I have made* Fractions *very* eaſie *and* familiar, *(tho' differing from any former* Method) *having mixed both* Vulgar *and* Decimal Fractions *together under the ſame Head, that the Ingenious may diſcover the* Eaſe *as well as* Excellency *and* Brevity *of the* Decimal *beyond the* Vulgar Fraction. *And as my* Paper *would admit, have added ſome* Variety *of* Meaſuring Superficies *and* Solids.

The Faults in the former Impreſſions, Care has been taken to correct in this *Seventeenth Edition.*

Tho H Hosgood 1890

Arithmetick.

CHAP. I.

Of NUMERATION.

I. ARITHMETICK is the Art of Numbering well, or of Accompting well by Numbers: For as Magnitude or Greatneſs is the Subject of *Geometry*, ſo is Multitude or Number the Subject of *Arithmetick*.

II. The whole Art of *Arithmetick* depends upon the true Knowledge of the Five following Rules, *viz. Numeration*, *Addition*, *Subtraction*, *Multiplication* and *Diviſion*. All the other Rules being compounded of theſe, we ſhall treat particularly of them in their Order.

III. *NUMERATION teaches to expreſs or write down the Value of any Number whatſoever propoſed.*

IV. All Numbers are written with ten Characters called Figures, of which the Laſt is called a Cypher, and of it ſelf ſignifieth Nothing, but ſerveth, (according as it is placed) to increaſe or diminiſh the Value of another Figure to which it is either annexed or prefixed.

V. The ten *Characters* or *Figures* by which all Numbers are expreſſed, are thus written, *viz.* 1, one; 2, two; 3 three; 4, four; 5, five; 6, ſix; 7, ſeven; 8, eight; 9, nine; 0, Cypher: The Nine firſt of theſe are called ſignificant Figures.

VI. All Numbers are either *Simple* or *Compound*.

1. A Number is ſaid to be *Simple*, when it conſiſteth but of *one Figure*, as, 4, 8, and 6, *&c.* are ſimple or ſingle in Nnmbers.

2. A Number is ſaid to be a *Compound* Number, when it is compoſed of *two*, *three*, *four*, or *more Figures*, ſuch as are 35, 356, and 7428, *&c.*

VII. Every *ſignificant Figure* hath a double *Value*, *viz* *Certain*, or *Uncertain*.

1. The *Value* of a Figure may be ſaid to be *certain*, when it ſignifies *ſimply* its *own* proper *Value*, without the Addition of any other Word for its Explanation, and ſo 4 ſignifies *four*, 8 ſignifieth *eight*, and 9 is *nine* &c.

2 The *Value* of a Figure may be ſaid to be *uncertain*, in reſpect of the *Place* it may ſtand in, and ſo 4 may ſignifie *forty*, or *four hundred*, or *four thouſand*, &c. and 8 may ſignifie *eighty*, or *eight hundred*, or *eight thouſand*, &c.

VIII. When a *Number* is compoſed of divers *Figures* ſet together like the Letters in a Word, that *Number* is ſaid to conſiſt of as many places as there are *Figures* uſed in the Compoſing thereof So the *Number* 4643 is ſaid to *conſiſt* of *four* places, becauſe it is compoſed of *four* Figures; the like is to be underſtood of any other.

IX. The *places* in every *Compound* Number are to be conſidered both as to their *Order*, and their *Value*.

1. The *order* of the *places* is from the *right-hand* to the *left*, the *firſt Figure* or *Cypher* towards the *right-hand* is ſaid to poſſeſs the firſt Place, and the next towards the *left-hand* is ſaid to poſſeſs the ſecond place, and the next to that the third place, *&c.*

So if this *Number* were propoſed, *viz.* 5734, here 4 is ſaid to poſſeſs the firſt, 3 the ſecond, 7 the third, and 5 the fourth place, *&c.*

2. The *Value* of every *Figure*, is diſcovered by the place that it ſtands in, *viz.* The *firſt* place is

the place of *Unites*, or ones; and the Figure that ſtandeth in that place ſignifieth its own proper or ſimple *Value*. The ſecond place is the place of *Tens*, and the Figure that ſtandeth there ſignifieth as many *Tens* as the Figure it ſelf containeth *Units*: As if it be 4, it ſignifieth four *Tens*, or forty; if it be 7, it ſignifieth ſeven *tens*, or ſeventy, *&c.* The *third* place of the place of *Hundreds*, and the Figure that ſtandeth there, is as many *Hundreds* as it containeth *Units*: So five in the *third* place is five *hundred*, and 6 ſignifieth ſix *hundred*, &c. The *fourth* place is the place of *thouſands*, and the Figure that ſtandeth therein ſignifieth as many *thouſands* as it contains *Units*, ſo 8 in the *fourth* place is eight *thouſand*, and 4 is four *thouſand*, &c. As,

Suppoſe this Number, *viz.* 4652, were given to have its *Value* expreſſed; the Figure 2, (in the *firſt* place) is two *Units*, or ſimply *two*; the Figure 5 (in the *ſecond* place) is five *tens*, or fifty; ſo 52 is thus expreſſed, *viz.* *fifty two*. The Figure 6 (in the *third* place) is ſix hundred, ſo 652 is thus expreſſed, *viz.* *Six hundred fifty two*: the Figure 4 (in the *fourth* place) is *four thouſand*, ſo 4652 is thus to be read; *viz.* *Four thouſand ſix hundred fifty two.*

In like manner if any Figure hath a *Cypher*, or *Cyphers* annexed to it, it ſhall ſtill retain the *value* of its place, as much as if a ſignificant Figure, or Figures, were annexed to it in the room of the *Cypher* or *Cyphers*; ſo if to the Figure 6 there be a *Cypher* annexed thus (60) its value is *ſix tens* or *fifty*, becauſe *ſix* ſtandeth in the *ſecond* place, or place of *Tens*. Likewiſe if it hath two *Cyphers* annexed to it thus (600) its value is *ſix hundred*, becauſe *ſix* poſſeſſeth the *third* place or place of *Hundreds*. Alſo (6000) is *Six thouſand*, becauſe 6 ſtandeth in the *fourth* place, or place of *thouſands*.

And the Value of any Figure increaſeth in a *Decuple* Proportion from the *Right* Hand to the *Left*, every place being *ten times* the Value of the Former, as you may ſee in the following TABLE.

Numeration TABLE.

Hundreds of Millions	*Tens of Millions*	*Millions*	*Hundreds of Thouſands*	*Tens of Thouſands*	*Thouſands*	*Hundreds*	*Tens*	*Units*	*The Numbers in the TABLE are thus to be Read, viz.*
9	8	7	6	5	4	3	2	1	987 Mil. 654 Th. 321
1	2	3	4	5	6	7	8	9	123 Mil. 456 Th. 789
	2	3	4	5	6	7	8	9	-23 Mil. 456 Th. 789
		3	4	5	6	7	8	9	—3 Mil. 456 Th. 789
			4	5	6	7	8	9	——456 Th. 789
				5	6	7	8	9	——56 Th. 789
					6	7	8	9	——6 Th. 789
						7	8	9	——789
							8	9	——89
								9	——9

Over-againſt every place of the Numbers in the foregoing Table is written (in Words in length) the Value thereof, *viz.* *Units*, *Tens*, *Hundreds*, *Thouſands*, &c. which Words being perfectly gotten by heart, and well underſtood, the Learner will be thereby enabled to expreſs or write down the Value of any Number propoſed.

And on the Right Hand of the Table, over-againſt every Number therein contained, you have Directions how to read or expreſs thoſe Numbers: As

987654321 is thus to be read, *viz.* *Nine hundred eighty ſeven Millions, Six Hnndred fifty four Thouſand, Three hundred and twenty one.* And the like is to be underſtood of the reſt.

Note, Although the foregoing Table be made to conſiſt but of Nine Places, yet it may be continued to more places at pleaſure, even *ad Infinitum,* obſerving that the Value of every place is ten Times as much as that which goeth before it; ſo the tenth Place is *Thouſands of Millions,* the Eleventh place is *Tens of Thouſands of Millions,* the Twelfth Place is *Hundreds of Thouſands of Millions,* and the thirteenth place is *Millions of Millions,* &c.

There is yet another Method uſed by ſome, that is very plain and uſeful in the expreſſing of great Numbers, or Numbers conſiſting of many Places, which is this, *viz.* make a point after every third Figure, beginning at the Right-hand, as in the following *Example.*

Let this Number be propoſed conſiſting of Fourteen places, *viz.* 84639042724536, and when every Third Figure is pointed, it will be thus, *viz.* 84. 639. 042. 724. 536. every Three Figures being called a Period, and are reckoned in order from the Right-hand towards the Left, *viz.* 536 is the firſt Period, 724 is the ſecond Period, 042 the third, &c. the firſt Period (which is 536) conſiſteth of *Units, Tens* and *Hundreds,* and is thus expreſſed, *viz. Five Hundred thirty Six,* and every other Period is to be read in every Reſpect as if it ſtood in the place of the firſt Period, only in expreſſing the Value of the ſecond Period, you muſt add thereto the word *Thouſand;* to the third Period you muſt add the word *Millions;* to the fourth Period the word *Thouſands of Millions;* to the fifth Period *Million of Millions,* and ſo the Number before propoſed is to be read as followeth, *viz.*

Millions of Millions	*Thouſands*	*Millions*	*Thouſands*	
84.	639.	042.	724.	536.

Eighty four *Millions of Millions*, Six hundred thirty nine *Thouſand*, forty two *Millions*, Seven hundred twenty four *Thouſand*, Five *Hundred* thirty ſix.

CHAP. II.

Of ADDITION.

ADDITION *teacheth to add, or put together divers Numbers, and to bring them to one total Sum.* As if Seven and Nine were given to be added together, their Sum will be 16; and the Sum of 5 and 4 is 9.

II. *Numbers* to be added together, each of them *conſiſts* either of *one* Denomination, or of *divers*, as if it were required to add 16 *l.* to 14 *l.* here both the given *Numbers* are of one Denomination, being *Pounds* only, without Shillings, Pence, or Farthings: But if it were required to add 36 *l.* to 14 *s.* 08 *d.* to 16 *l.* 12 *s.* 06 *d.* theſe conſiſt of *divers* Denomination, *viz.* of Pounds, Shillings and Pence.

III. When it is required to *add* together ſeveral *Numbers* of one *Denomination*, they muſt (in order to the Work) be diſpoſed of according to the following *Rule*, *viz.*

Place *the given Numbers one under the other in ſuch Order, that Units may ſtand under Units, Tens under Tens, Hundreds under Hundreds, Thouſands under Thouſands,* &c.

If you were to add 136 and 42 together, they muſt be placed one under the other as followeth, *viz.*

136	Or,	42
42		136

IV. Having placed the given Number as before is directed, then draw a ſtreight Line under them, and (beginning at the Place of *Units*) add all the Figures together that ſtand over one another in that *Rank*; putting their Sum under the ſaid ſtreight Line; as in this Example, I ſay, 2 and 6 is 8, wherefore I put 8 under the Line, and in its proper Place, *viz.* under 2 and 6, and proceed to the next Rank, which is the Place of Tens, ſaying, 4 and 3 is 7, wherefore I put 7 in its proper Place under the Line; and proceed to the next and laſt Rank, where I find only 1, wherefore I put one in its proper place under the Line, and ſo the Work is finiſhed, and I find thereby that the Total Sum of 136 and 42 to be 178: See the Operation as followeth.

136	42
42	136
178	178

V. If in adding together any of the Ranks (as is before directed) the Sum amounts to, or exceedeth 10, or any Number of Tens, then in ſuch a Caſe you are either to ſet down a *Cypher* under the Line in its proper place, or elſe the *exceſs* above the *ten* or *tens*; and for every *ten* carry an *unit* to be added to the next Rank of Figures. As if it amount to 30, then ſet down (0) a Cypher, and carry 3 (for the three Tens) to be added to the next Rank; if it amount to 34, then ſet down 4 under the Rank that you add, and carry three to the next, *&c.* And when you have caſt up the laſt Rank or Series towards the Left-hand, ſet down the Total that it amounteth to, as in the following Examples.

	(1)	(2)	(3)	(4)
	748	4758	1648	20864
	364	6473	3472	78987
	296	2891	1865	6217
	242	1862	3479	4320
Sum	1650	15984	10464	110388

In the firſt of theſe Examples I begin, ſaying, 2 and 6 is 8, and 4 is 12, and 8 makes 20, which is juſt two Tens; wherefore I put down 0 under the Line, and carry 2 to the next Rank for the two Tens, and proceed, ſaying, 2 that I carry, and 4 is 6, and 9 is 15, and 6 is 21, and 4 is 25, which is 5 above 20, wherefore I put down 5 under the Line, and carry 2 for the two Tens to the next Rank, and then proceed, ſaying, 2 that I carry, and 2 is 4, and 2 is 6, and 3 is 9, and 7 makes 16, wherefore (becauſe it is the laſt Rank) I put down 16 under the Line, and ſo the Work is finiſhed, the Total Sum of the *Addition* being 1650: The ſame is to be obſerved in the reſt of the Examples.

VI. *Addition of diverſe Denominations* cannot be well performed, until you know the Value of common Coins, Weights and Meaſures, *&c.* As how many Pence make 1 Shilling, how many Shillings make 1 Pound, and how many Ounces make 1 Pound, how many Pounds make a Quarter of a C. and how many Quarters make a C. Weight. *In*

In Addition of Engliſh Money, It is neceſſary firſt of all to underſtand the Meaning and Signification of all the Characters ſuperſcribed over every Sum, as *lib. s. d.*

Note, That *lib.* ſignifies **Libra**, a *Pound*, not here in reſpect to common Weight, but *Money*, and for Diſtinction is called a *Pound Sterling*. So *s.* ſtands for **Solidus** (a Coin of Braſs) uſed by the *Romans*, but with us of Silver, and ſignifies a *Shilling*; twenty of theſe Pieces make *One Pound Sterling*.

de. or *d.* ſtands for **Denarius**, a *Penny*, which contained ten Pieces of the *Romans* leaſt Coin: It hath had a various Eſtimate in our *Engliſh Coins*. It now ſignifies a *Penny*, the 12th part of a Shilling, or 12 of which makes a Shilling. For until the Reign of *Henry* VI. a *Penny* was the 20th part of an Ounce of Silver, and in his Reign made the 30th. By *Edward* IV. 40 *Pence* made an Ounce. By *Henry* VIII. there was allowed 45 *d.* to the Ounce. And by Q. *Elizabeth* an Ounce of Silver was divided into 60 Parts, called *Pence*, as it is at this Day.

ADDITION of MONEY.

Note, 4 *Farthings is a Penny*, 12 *Pence a Shilling*, *and* 20 *Shillings a Pound* Sterling, *or* Engliſh Money.

The following TABLE *ought to be learn'd by heart.*

12 times

1	is	12
2	—	24
3	—	36
4	—	48
5	—	60
6	—	72
7	—	84
8	—	96
9	—	108
10	—	120
11	—	132
12	—	144

d.		s.		d.
20	is	1	:	8
30	—	2	:	6
40	—	3	:	4
50	—	4	:	2
60	—	5	:	0
70	—	5	:	10
80	—	6	:	8
90	—	7	:	6
100	—	8	:	4
110	—	9	:	2
120	—	10	:	0

VII. When it is required to add together *Numbers* conſiſting of *divers Denominations*, you are to place the given Numbers in ſuch order one under the other, that each Rank may conſiſt of one and the ſame Denomination. That is to ſay, if it be in Money: Let *Pounds* be ſet under *Pounds*, *Shillings* under *Shillings*, *Pence* under *Pence*, and *Farthings* under *Farthings*. The like is to be underſtood of *Weight*, *Meaſure*, *Time*, &c.

Then (having firſt drawn a Line under them) add them together, conſidering how many of each ſmaller Denomination make an Unit of the next that is ſuperior to it, (always obſerving to begin at the leaſt Denomination) and for every ſuch Unit, carry 1 to the next ſuperior Denomination, *viz.* If it be in *Addition of Money*, for every 4 in the Farthings you muſt carry 1 to the Pence (becauſe 4 Farthings is a Penny;) (for every 12 in the Pence carry 1 to the Shillings (becauſe 12 Pence is a Shilling; and for every 20 contained in the Shillings, carry 1 to the Pounds (becauſe 20 Shillings is a Pound;)-And the odd Farthings, Pence and Shillings, ſet down in their proper Ranks under the Line, as in the following Example.

Some do indeed make a Place of *Farthings*, and ſet a *q.* over them for *quartillier*, which is not very proper, and ſeldom uſed by Men of Buſineſs; therefore when you would write down three *Farthings*, or a *Half-penny*, or a *Farthing*, write it thus.

$\frac{3}{4}$ ——— *Three Farthings.*
$\frac{1}{2}$ ——— *A Half-penny.*
$\frac{1}{4}$ ——— *A Farthing.*

Let it be required to add together 134 *l.* 16 *s.* 08 *d.* $\frac{1}{4}$. and 286 *l.* 10 *s.* 4 *d.* $\frac{3}{4}$. and 498 *l.* 13 *s.* 06 *d.* $\frac{1}{2}$. and 791 *l.* 18 *s.* 09 *d.* $\frac{1}{2}$. Then in order to the Work I ſet them down and draw a Line under them, as followeth.

l.		*s.*		*d.*
134	:	16	:	08 ¼
286	:	10	:	04 ¾
498	:	13	:	05 ½
794	:	18	:	09 ¼

Firſt, I begin with the leaſt Denomination, which is that of Farthings, and add them together, ſaying, ¼ and ½ is ¾, and ¾ 6, and ¼ is 7 Farthings, which is 1 Penny and 3 Farthings, wherefore I put 3 Farthings under the Line, and under the Denomination of Farthings, and carry 1 (for the Penny) to the next Denomination of Pence, ſaying 1 that I carry and 9 is 10, and 6 is 16, and 4 is 20, and 8 is 28, now 28 Pence is 2 Shillings 4 Pence, wherefore I put 4 under the Line, and carry 2 Shillings to the Denomination of Shillings, ſaying, 2 that I carry and 18 is 20, and 13 is 33, and 10 is 43, and 16 is 59 Shillings, which 2 Pounds 19 Shillings, whereof I put the 19 Shillings under the Line, and under the Denomination of Shillings, and carry 2 (for the 2 Pounds) to the Denomination of Pounds, and proceed, ſaying, 2 that I carry and 4 is 6, and 8 is 14, and 6 is 20, and 4 makes 24, wherefore I put down 4 under the Line, and carry 2 for the two Tens to the next Rank, ſaying, 2 that I carry and 9 is 11, and 9 is 20, and 8 is 28, and 3 is 31, which is 1 above 30, wherefore I put 1 under the Line and carry 3 (for the three Tens) to the next Rank, and proceed, ſaying, 3 that I carry and 7 is 10, and 4 is 14, and 2 is 16, and 1 is 17, wherefore I put 17 under the Line, becauſe it is the Sum of the laſt Rank, and ſo the whole Work is finiſhed, and I find the Sum of the given Numbers to be 1714 *l.* 19 *s.* 4 *d.* 03 *q.* as by the following Work appeareth.

	l.	:	*s.*	:	*d.*
	134	:	16	:	08 ¼
	286	:	10	:	04 ¾
	498	:	13	:	06 ½
	794	:	18	:	09 ¼
Sum	1714	:	19	:	04 ¾

To prove your Addition, after you have added up your whole Sum, draw a Line with your Pen under the uppermoſt Number or Sum, and then add together all the other Numbers, except the *uppermoſt*. And when you have ſo done, add the Amount, or Sum thereof to the uppermoſt Sum above the Line; and if that Sum be equal to the Sum firſt found, the Work is true, otherwiſe not.

Here, *Note once for all*, That whatſoever Sums you are to add together, whether of *Money*, *Weight*, *Meaſure*, *Time*, &c. that when you come to the greateſt Denomination, as you caſt up the ſeveral Ranks thereof, you are to carry the Tens of every preceeding Rank to that which follows it, as is directed in the *Fifth Section* of this Chapter, and as the Ranks in the denomination of Pounds in the laſt *example* are caſt up.

The old common way of Addition of Money, is to make a *ſpeck* or *tittle* with your Pen at every 12 that is found in the Addition of your Pence, and ſo many Specks as you find, carry ſo many Shillings to the Place of Shillings, ſetting down what remains above 22 under the Place of Pence. Then make a ſpeck at every 20 you find in the Addition of your Shillings, and for ſo many Specks carry ſo many Pounds to the place of Pounds, ſetting down the *Overplus* under the place of Shillings, and then proceed to add up the Pounds.

But the beſt Method, which I would commend to your Practice is this:

Firſt, Caſt up your Pence, or make a ſmall Comma at every 60 *d.* which is 5 *s.* (and it will be a great eaſe to the Memory where Sums are long) and by the foregoing Table you may readily know, how many Shillings and Pence your Pence amount to; then ſet down your odd Pence under the place of Pence, and carry your Shillings to the Unit of Shillings, and add them up as in Addition of Numbers, by ſetting down the odd above the Tens, and carry the Tens to the Tens of Shillings, or Angels, (becauſe 10 *s.* is an Angel) then for every two in the Place of Angels carry ſo many Pounds to the place of Pounds. An Example or two will make it plain and eaſie.

Example I.

A Shop-keeper looking over his Shop-Books finds that A *owes him* 195 *l.* 11 *s.* 9 *d.* ½. B 57 *l.* 14 *s.* 10 *d.* ¼. C 450 *l.* 10 *s.* 2 *d.* D 27 *l.* 16 *s.* 11 *d.* ¾ E 44 *l.* 13 *s.* 9 *d.* ½. F 100 *l.* G 8 *l.* 14 *s.* 9 *d.* ½. H 160 *l.* 10 *s.* 2 *d.* ½. I 54 *l.* 11 *s.* 11 *d.* K 73 *l.* 9 *s.* 10 *d.* ¼.

In order to the Work, place the Sums one under the other, as is before directed, thus.

	l.		*s.*		*d.*
—— *A*	195	:	11	:	9 ½
—— *B*	57	:	14	:	10 ¼
—— *C*	450	:	10	:	2
—— *D*	27	:	16	:	11 ¾
—— *E*	44	:	13	:	9 ½
—— *F*	100	:	00	:	0
—— *G*	8	:	14	:	9 ½
—— *H*	160	:	10	:	2 ½
—— *I*	54	-	11	:	11
—— *K*	73	:	9	:	10 ¼
	1173	:	14	:	4 ¼

Then begin with the leaſt Denomination towards the Right-hand, which is Farthings, ſaying, 1 and 2 is 3, and 2 is 5, and 2 is 7, and 3 is 10, and 1 is 11, and 2 is 13 Farthings, which is 3 Pence $\frac{1}{4}$, wherefore put down $\frac{1}{4}$ under the Farthings; and carry 3 Pence to the Place of Pence, and ſay, 3 and 10 is 13, and 11 is 24, and 2 is 26, and 9 is 35, and 9 is 44, and 11 is 55, and 2 is 57, and 10 is 67, and 9 is 76. Now by your Table 72 Pence is 6 *s.* therefore 76 is 6 *s.* 4 *d.* wherefore put down 4 *d.* under the Place of Pence, and carry 6 *s.* to the Place of Shillings, ſaying, 6 that you carry, and 9 is 15, and 1 is 16, and 4 is 20, and 3 is 23, and 6 is 29, and 4 is 33, and 1 is 34, wherefore put down 4 under the Place of Shillings, and carry three Tens to the Place of Tens of Shillings, or Angels, and ſay, 3 that you carry and 1 is 4, and 1 is 5, and 1 is 6, and 1 is 7, and 1 is 8, and 1 is 9, and 1 is 10, and 1 is 11; now 11 Angels, or 11 ten Shillings is 5 *l.* 10 *s.* or 5 *l.* 1 Angel, therefore place 1 Angel under the Angels, and it makes the 4 to be 14 *s.* which place under the Place of Shillings, and carry 5 Pound to the Place of Pounds and finiſh the Work as before directed; and the Total Sum found will appear to be 1173 *l.* 14 *s.* 4 *d.* $\frac{1}{4}$.

Example II.

A Banker on the Balance of his Books, finds himſelf indebted to L 50 l. 10 s. 3 d. $\frac{1}{4}$. *to* M 100 l. 10 s. 10 d. *to* N 25 l. 7 s. 8 d. $\frac{3}{4}$. *to* O 59 l. 17 s. *to* P. 507 l. 16 s. 10 d. $\frac{1}{2}$. *to* Q 7 l. 14 s. 9 d. $\frac{1}{4}$. *to* R 1 l. 17 s. *to* S 25 s. 11 d. $\frac{1}{2}$. *to* T 415 l. 10 s. 9 d. *to* V 76 l. 13 s. 9 d. $\frac{1}{2}$. *to* W 100 l. *to* X 15 s. 11 d. $\frac{1}{2}$. *to* Y 17 l. 17 s. *to* Z. 10 l. 00 s. 4 d. $\frac{1}{2}$.

l. s. d.

	l.		*s.*		*d.*
L——	50	:	10	:	3 ¼
M——	100	:	10	:	10
N——	25	:	7	:	8 ¾
O——	59	:	17	:	0
P——	507	:	16	:	10 ½
Q——	7	:	14	:	9 ¼
R——	1	:	17	:	0
S——	1	:	5	:	11 ½
T——	415	:	10	:	9
V——	76	:	13	:	9 ½
W——	100	:	00	:	0
X——	00	:	15	:	11 ½
Y——	17	:	17	:	0
Z——	10	:	00	:	4 ½
Sum	1375	:	18	:	3 ¾

Firſt of all add up your Farthings, as before directed, and they make 15, which is 3 *d.* ¾. place ¾. under the Farthings, and carry 3 Pence to the Pence, and ſay, 3 and 4 is 7, and 11 is 18, and 9 is 27, and 9 is 36, and 11 is 47, and 9 is 56, and 10 is 66, *at which* 10 *make a Comma*, becauſe 66 *d.* is 5 *s.* 6 *d.* then proceed and carry 6 *d.* to the next Figure, which is 8, and ſay 6 and 8 is 14, and 10 is 24, and 3 is 27. Now 27 *d.* is 2 *s.* 3 *d.* and the 5 *s.* before, makes 7 *s.* 3 *d.* wherefore ſet down the 3 *d.* Pence under the Place of Pence, and carry 7 Shillings to the Place of Shillings, and proceed to finiſh your Sum as was taught you in the laſt Precedent, and the Total Sum will appear to be 1375 *l.* 18 *s.* 3 *d.* ¾.

Addition of Averdupois *Weight.*

Note, *That* 16 *Drams is an Ounce,* 16 *Ounces, is a Pound,* 28 *Pound is a Quarter of an Hundred,* 4 *Quarters is an Hundred Weight, conſiſting of* 112 *Pounds, and* 20 *Hundred is a Turn* Averdupois *Weight.*

The Marks or Characters by which this Weight is known or expreſſed are theſe, *viz. For Tuns (T.) Hundreds (C.) Quarters (Qr.) Pounds (*℔.*) Ounces (oz.) Drams (dr.)* As in the following Example.

Tun	C.	*qr.*	℔
25	14	2	24.
57	16	3	25.
42	10	1	17
96	14	2	27.
54	17	2	18.
59	16	3	22.
75	14	2	19.
64	17	3	26
478	04	0	10

C.	*qr.*	℔	*oz.*
154	1	19	10.
275	3	19	11.
476	2	10	07
57	3	14	08.
45	1	10	10
17	2	22	11.
45	3	17	09.
76	2	19	14
1150	1	23	00

Let it be required to add up the Sum above, expreſſing *Tuns.* *C. qr.* and ℔. Firſt, add up the Pounds by making a Speck or Tittle at every 28 you find in the Place of Pounds, as you may ſee in the above-mentioned *Example,* where is found to be ſix Specks, and 10 ℔ over, which 10 Place under the Denomination of Pounds, and carry 6 to the Quarters, and add them up, they make 24, which is 6 *C.* for which put a (0) under the Place of *qr.* and carry 6 *C.* to the Place of *C.* Then proceed to add up your *C.* after the ſame Manner as you carry from Shillings to Pounds, becauſe 20 *C.* make a *Tun.*

Laſtly, Add up the *Tuns*, and the Total will appear to be 478 *Tuns*, 04 *C.* 0 *qr.* 10 ℔.

With *Troy Weight* are weighed Bread, Gold, Silver, and Electuaries. And with *Averdupois Weight*, are weighed Butter, Cheeſe, Fleſh, Wax, Tallow, Pitch, Rozen, Lead, Iron, all ſorts of Grocery-wares, and all ſuch Kind of Garble whence there may iſſue a Waſte.

The Pound *Averdupois*, containing 16 Ounces, is equal to 14 *oz.* 12 *pw. Troy Weight*. And the Pound *Troy Weight*, conſiſting of 12 Ounces, is about 13 Ounces, 2 Drams and a half of *Averdupois Weight*; ſo that he who tells you a Pound a Bread is as heavy as a Pound of Cheeſe, is very much miſtaken, the one being a Pound *Troy*, and the other a Pound *Averdupois Weight*.

WOOL is alſo weighed with *Averdupois Weight*, but the Diviſions are ſomewhat different, *viz.* for Wool.

7 Pounds is a Clove, 2 Clove is a Stone, 2 Stone is a Todd, 6 Todds 1 Stone, or 13 Stone is a Wey, 2 Wey is a Sack, 12 Sacks is a Laſt of Wool.

Note, That according to the foregoing Diviſion 182 ℔ is a *Wey*, but in ſome Countries the *Wey* is 256 ℔ *Averdupois*, as in *Suffolk*, &c. And in *Eſſex* there is 336 ℔ in a *Wey*.

Addition of Apothecaries *Weight.*

Apothecaries Weights are the ſame in the main with *Troy Weight*, only the Subdiviſions of the Pound are different, as followeth, *viz.*

Note, *That 20 Grains is a Scruple, 3 Scruples is a Dram, 8 Drams is an ounce, and 12 Ounces is a Pound Weight.* The Marks or Characters by which Apothecaries Weights are known, are theſe, *viz. For Pounds* (℔) *Ounces* (℥) *Drams* (ʒ) *Scruples* (℈) *Grains* (*gr.*)

℔	℥.	ʒ.	℈.	gr.
76	00	2	0	15
54	10	5	2	17
68	11	7	1	12
28	04	4	1	14
16	10	0	2	18
35	06	1	0	14
280	7	6	1	10

Addition of Troy *Weight.*

Note, *That* 24 *Grains is a Penny Weight,* 20 *Penny Weight is an Ounce, and* 12 *Ounces is a Pound* Troy *Weight.*

The Notes or Characters by which *Troy Weight* is known, are theſe, *viz.* The Mark of Pounds is (℔) of Ounces (*oz.*) of Penny Weights (*pw*) of Grains (*gr.*)

Let it be required to add the following Particulars together, *viz.* 24 ℔. 09 *oz.* 06 *pw.* 11 *gr.* and 164 ℔. 10 *oz.* 14 *pw.* 18 *gr.* and 82 ℔. 7 *oz.* 17 *pw.* 20 *gr.* and 8 ℔. 11 *oz.* 18 *pw.* 22 *gr.*

Now, in order to find out the Sum of theſe given Quantities, I place them one under another orderly, as you ſee in the Margent, and draw a Line under them. Then I begin with the denomination of Grains, making a Prick with the Pen at every 24 (for eaſe) and bear the overplus to the next above, ſaying, 22 and 20 is 42, which is 18 above 24, wherefore I make a Mark at 20, and carry the 18 up higher, ſaying 18 and 18 is 36, which is 12 above 24, wherefore I make a Mark at 18, and carry the 12 to the next above, ſaying, 12 and 11 makes 23, which I put under the Line in its proper Place, and obſerve how many Pricks I have made in the caſting up this Denomination, which I find to be 2, wherefore I carry 2 to the next, and proceed (as in the Shillings in *Addition of Money*, becauſe I carry 1 for every 20) ſaying, 2 and 8 is 10, and 7 is 17, and 4 is 21, and 6 is 27, and (then down again with the Tens) 10 is 37, and 10 is 47, and 10 is 57 Penny-weights; which is 2 *oz.* 17 *pw.* whereſore I put 17 *pw.* in its Place under the Line, and carry the 2 *oz.* ſaying, 2 that I carry and 1 is 3, and 7 is 10, and 9 is 19, and 10 is 29, and 10 is 39 Ounces, which is 3 ℔. 3 *oz.* whereſore I put the 3 Ounces in its proper Place under the Line, and carry 3 ℔. to the Pounds and proceed to finiſh the Work as is before directed, which being done, I find the total Sum to be 281 ℔. 3 *oz.* 17 *pw.* 23 *gr.* as in the Margent.

℔.	*oz.*	*pw.*	*gr.*
24	09	06	11
164	10	14	18.
82	07	17	20.
8	11	18	22
281	03	17	23

More Examples for Practice.

℔.	oz.	pw.	gr.	℔.	oz.	pw.	gr.
379	05	14	18.	297	10	07	13
168	11	17	14	768	09	14	06
794	09	10	22.	635	11	18	21.
634	10	18	20.	74	08	18	19.
75	06	11	15.	35	10	14	14.
34	00	06	16	24	06	16	18
2087	09	00	09	1837	10	10	19

Addition of Liquid Meaſure.

The leaſt Deuomination in *Liquid Meaſure* is a Pint, which was heretofore deduced from a Pound *Troy Weight*, a Pound of Wheat *Troy Weight*, making a Pint *Liquid Meaſure*, but in regard of the Diſagreement thereof with the Rules of Solid Geometry in the Gauging of Brewers Veſſels, ſome taking 288 ſolid Inches for a Gallon, ſome 286, *&c.* it occaſioned a Difference betweeen the Brewers and the Managers of his Majeſty's *Exciſe*, till the Parliament taking the Matter into Conſideration, ordained, That 282 ſolid Inches ſhould make the Gallon of *Beer Meaſure*, and the Gallons being ſubdivided into 2 Pottles, each Pottle into 2 Quarts, and each Quart into 2 Pints, ſo that the Pint being the eighth Part of a Gallon, muſt contain 28 ſolid Inches and 7 eighth Parts of an Inch for *Wine Meaſure*, and 35 ſolid Inches and a Quarter for *Beer Meaſure*. *Wherefore* Note, *That* 35 $\frac{1}{4}$ *ſolid Inches make a Pint of* Beer Meaſure, 2 *Pints is a Quart, and* 2 *Quarts is a Pottle*, 2 *Pottles or* 282 *ſolid Inches a Gallon*, 8 *Gallons is a Firkin of Ale*, 9 *Gallons is a Firkin of Beer, and* 2 *Firkins is a Kilderkin, and* 2 *Kilderkins is a Barrel*, 1 $\frac{1}{2}$ *Barrel, or* 54 *Gallons is a Hogſhead of Beer.*

In Wine Meaſures.

2 Pints is a Quart, 2 Quarts is a Pottle, 2 Pottles is a Gallon, 42 Gallons is a Teirce, or third Part of a Pipe or Butt, 63 Gallons is a Hogſhead, 2 Hogſheads is a Pipe or Butt, and 2 Pipes or Butts is a Tun of Wine.

☞ *Note*, Honey and Oil are meaſured by this Meaſure.

Examples of Wine *Meaſure.*

T.	hhds	gal.	pts.	T.	hhds.	gal	pts.
37	3	18	5	240	1	48	3
48	2	24	0	196	3	22	1
67	1	20	6	97	3	51	5
38	2	17	7	85	2	17	6
79	0	47	3	43	0	25	0
64	1	52	4	93	1	38	5
335	3	55	1	757	1	14	4

Addition of Dry *Meaſure.*

The leaſt Denominative part of *Dry* Meaſure is a Pint, which is taken from *Troy Weight.*

With theſe are meaſured all dry Subſtances, as, *Corn*, *Salt*, *Coal*, *Sand*, &c. The Table followeth.

In Dry Meaſure, Note, *That 2 Pints make a Quart, 2 Quarts a Pottle, 2 Pottles a Gallon; 2 Gallons a Peck, 4 Pecks a Buſhel* Land Meaſure, *5 Pecks a Buſhel* Water Meaſure, *8 Buſhels a Quarter, 4 Quarters a Chalder, and 5 Quarters a Wey.*

Note, 36 *Buſhels is a Chaldron of Sea-Coal* in London.

Examples of Dry *Meaſure.*

Chalds.	*qrs.*	*Buſh.*	*pec.*	*Chalds.*	*qrs.*	*Buſh.*	*pec.*
148	3	6	3	227	1	5	0
375	1	7	2	742	3	7	1
296	2	4	3	148	2	4	1
128	1	5	0	97	2	6	3
94	0	5	2	48	0	3	0
38	2	4	3	62	3	1	1
1082	1	2	1	1327	2	3	2

Addition of Long *Meaſure.*

Long Meaſure is originally deduced from a Barley Corn taken out of the Middle of the Ear and well dried, from whence is deduced the following Table, *viz.*

In Long Meaſure, Note, That 3 *Barley Corns make an Inch,* 12 *Inches a Foot,* 3 *Foot a Yard,* 3 *Foot* 9 *Inches, or a Yard and a Quarter, is an Ell* Engliſh, 6 *Feet a Fathom,* 5 *Yards and an half, or* 16 *Feet and an half, make one Statute Pole, or Perch,* 40 *Poles or Perches make a Furlong, and* 8 *Furlongs make an* Engliſh *Mile.*

Examples of Long *Meaſure.*

Miles.	*Fur.*	*Perch.*	*Miles*	*Fur.*	*Perch.*
48	7	24	134	3	18
37	3	18	342	4	24
65	3	28	179	5	16
36	5	00	84	0	25
107	1	07	76	7	27
205	6	17	84	2	13
501	3	14	902	0	03

Addition

Addition of Cloth *Meaſure.*

Note, *That* 4 *Nails or* 9 *Inches make a quarter of a Yard,* 3 *quarters of a Yard make an Ell* Flemiſh, 4 *quarters a Yard* Engliſh, 5 *quarters of a Yard,* or 45 *Inches is an Ell* Engliſh.

Examples of Cloth *Meaſure.*

Yds.	*qu.*	*na.*	*Ells.*	*qrs.*	*na.*	*Ells fl.*	*qrs.*	*na.*
137	3	3	376	2	0	184	1	2
295	1	2	378	3	3	357	2	1
112	2	3	742	3	1	475	2	2
215	0	1	97	2	2	251	1	0
174	1	2	84	1	2	164	0	2
764	3	0	68	0	3	87	1	3
1700	0	3	1747	3	3	1521	0	2

Addition of Land *Meaſure.*

From the foregoing Table of Long Meaſure, is alſo Superficial Meaſure deduced, that of Land Meaſure being as follows, *viz.*

In Land Meaſure, 40 Square Poles or Perches make a Rood, and 4 Roods make an Acre.

Examples of Land *Meaſure.*

Acr.	*Rood.*	*Per.*	*Acr.*	*Rood.*	*Per.*	*Acr.*	*Rood.*	*Per.*
120	2	34	164	1	20	320	3	10
275	3	14	130	3	25	180	1	19
162	1	35	644	2	17	672	3	28
98	2	20	563	0	24	191	0	12
47	3	30	372	3	18	634	1	15
64	1	15	140	1	26	87	2	14
769	3	28	2016	1	10	2087	0	18

Of TIME.

The Denominative Parts of Time are originally deduced from the Sun's Motion in the Heavens, which is carried round the ſame from *Eaſt* to *Weſt* by the rapid Motion of the *Primum Mobile* in one Day Natural, which Day is divided into 24 ſuppoſed equal Parts, called Hours, and each Hour is ſubdivided into 60 Minutes, *&c.* whence ariſeth the following Table, *viz.*

In Time, *Note,* That 60 *Minutes make an Hour,* 24 *Hours make a Natural Day,* 7 *Days make a Week,* 4 *Weeks make a Month, conſiſting of* 28 *Days,* 13 *Months* 1 *Day and* 6 *Hours make a Year.*

However, in the ordinary Computation of Time, the Year is divided into 12 unequal Kalendar Months, whoſe Names, and the Numbers of Days that each containeth, are as followeth, *viz.*

	Days		Days
January	31	*July*	31
February	28	*Auguſt*	31
March	31	*September*	30
April	30	*October*	31
May	31	*November*	30
June	30	*December*	31

Note, That the 6 odd Hours is reckoned but once in 4 Years, and the one whole Day is added to that Year making it to conſiſt of 366 Days, and is called *Leap-Year*; the ſaid Day is added to *February*, which then containeth 29 Days.

Note alſo, *That the Minute is uſually ſubdivided into* 60 *Secconds, and each Second into* 60 *thirds*, &c.

The Tropical Year, or the Time the Sun leaves the Tropick, till the Time it returns to it again, by the Obſervations of the moſt Accurate Aſtronomers, is found to conſiſt of 365 *Days*, 5 *Hours*, 49 *Minutes*, 4 *Seconds*, *and* 21 *thirds*.

CHAP. III.

Of SUBTRACTION.

I. SUBTRACTION *teacheth to take a leſſer Number from a greater, or an equal from an equal; whereby we diſcover the* Remainder, Exceſs, *or* Difference.

II. *In Subtraction*, if the Numbers given be Integers, that is, conſiſting of one Denomination, then place the biggeſt Number uppermoſt, and the leſſer in order under it, *viz.* Units under Units, Tens under Tens, Hundreds under Hundreds, &c. And draw a Line under them.

III. Then begin at the Place of Units, taking the lowermoſt Figure out of the Uppermoſt, and place the Remainder under the Line, then proceed to the Place of Tens, and do in the ſame Manner, and then to the Place of Hundreds, &c. till the whole Work be finiſh'd: Then ſhall the Number under the ſaid Line be the Remainder or Difference.

Example.

Let it be required to find the Difference between 48 *and* 16 ?

Firſt, I put down the biggeſt Number 48, and place 16 the leſſer Number under it, and under both I draw a Line, as you ſee in the Margent ; then I begin at the Place of Units, ſaying, 6 out of 8 and there remain 2, which I place under the Line, and proceed to the next Place, ſaying, 1 from 4 and there remains 3, which I likewiſe place under the Line, and the Work is finiſhed. So that I find the Remainder or Difference between 48 and 16, to be 32, as you may ſee by the Work in the Margent.

48
16
—
32

More Examples of the like Nature follow.

From	743	586	3785	1842
Subtr.	121	270	205	342
Remains	622	316	3580	1500

But if the particular Figure which you are to *Subtract*, be greater than the Figure out of which it is to be *Subtracted* ; then you are to borrow 10, and add it to the uppermoſt Figure, and then *Subtract* the ſaid lowermoſt Figure from their Sum, and place the *Remainder* underneath the Line, and for that which you borrow, add 1 to the next Figure in the lowermoſt Line, and proceed. Let this be repeated as often as there is Occaſion.

Example.

Example.

A Merchant ſells 6 Hogſheads of Sugar, viz.

	C.	qrs.	℔.		C.	qrs.	℔.
No. 1 Gr.	14 -	2 -	10	Tare	1 -	3 -	15
2	7 -	1 -	19		2 -	0 -	05
3	16 -	2 -	14		2 -	1 -	10
4	17 -	1 -	10		2 -	1 -	16
5	18 -	2 -	17		2 -	1 -	12
6	14 -	1 -	22		1 -	3 -	22
Groſs	89 -	0 -	08	Tare	12 -	3 -	24
Tare	12 -	3 -	24				
Reſt Neat	76 -	0 -	12				

Subtraction of Troy *Weight.*

	oz.	pw.	gr.	oz.	pw.	gr.
Bought	115 -	07 -	05	976 -	11 -	06
Sold	94 -	3 -	10	149 -	14 -	11
Reſt	21 -	03 -	19	826 -	16 -	19
Proof	115 -	7 -	05	976 -	11 -	06

	℔.	oz.	pw.	℔.	oz.	pw.	gr.
Bought	375 -	05 -	13 ½	194 -	3 -	09 -	16
Sold	196 -	10 -	17 ¼	95 -	7 -	14 -	18
Reſt	178 -	06 -	16 ¼	98 -	7 -	14 -	22
Proof	375 -	05 -	13 ½	194 -	3 -	09 -	16

I might proceed to give Examples in Subtraction of Liquid Meaſure, Dry Meaſure, Long Meaſure, Apothecaries Weights, Time, Motion, *&c.* but there being no more Difference between the working of theſe and thoſe *Examples*, than only obſerving the Tables of each, which are delivered in the Second Chapter, therefore I forbear, this being ſufficient for the meaneſt Capacity.

CHAP. VI.

Of MULTIPLICATION.

I. IN *Multiplication* that are always two Numbers given to find out a Third, which ſhall cantain either of the given Numbers as many times as the other containeth a Unit.

II. Of the two Numbers given, the one is called the *Multiplicand*, and the other is called the *Multiplier*, and the Number found out by the Operation is called the *Product*.

III. The *Multiplicand* is the Number given to be multiplied, and is uſually, for Order Sake, the biggeſt of the Two given Numbers.

IV. The *Multiplier* is that by which the *Multiplicand* is multiplied, and is uſually the leaſt Number.

V. The *Product* is the Number produced by the *Multiplication*, and it containeth the *Multiplier* as many times as the *Multiplicand* containeth Unites :

or it containeth the *Multiplicand* as often as the *Multiplier* containeth Units.

VI. *Multiplication* is either *Simple* or *Compound.*

VII. *Simple Multiplication* is when the *Multiplicand,* and the *Multiplier*, do each of them conſiſt of one ſingle Figure only : As if it were required to multiply 4 by 3, 5 by 2, 9 by 7, *&c.* Here 3 times 4 is 12, and 2 times 5 is 10, and 7 times 9 is 63 ; now 12, 10 and 63, are the *Products* of each *Multiplication.*

VIII. All the Variety of *Simple Multiplication* is contained in the following Table, which muſt be learned by Heart, before the Learner can make any further Progreſs.

Multiplication TABLE.

2

2 times	2 is	4
	3	6
	4	8
	5	10
	6	12
	7	14
	8	16
	9	18
	10	20
	11	22
	12	24

3

3 times	3 is	9
	4	12
	5	15
	6	18
	7	21
	8	24
	9	27
	10	30
	11	33
	12	36

4

4 times	4 is	16
	5	20
	6	24
	7	28
	8	32
	9	36
	10	40
	11	44
	12	48

5 times	5 is	25
	6	30
	7	35
	8	40
	9	45
	10	50
	11	55
	12	60

6 times	6 is	36
	7	42
	8	48
	9	54
	10	60
	11	66
	12	72

7 times	7 is	49
	8	56
	9	63
	10	70
	11	77
	12	84

8 times	8 is	64
	9	72
	10	80
	11	88
	12	96

9 times	9 is	81
	10	90
	11	99
	12	108

IX. Con-

IX. *Compound Multiplication* is when the *Multiplicand*, or *Multiplier*, or both of them, do conſiſt of *Compound Numbers*, that is, of more Figures or Places than one.

As if it were required to multiply 324 by 2, here the *Multiplicand* is 324, which conſiſteth of 3 Places, and the *Multiplier* is 2.

X. When it is required to multiply one Number by another, firſt ſet down the biggeſt Number for the *Multiplicand*, and under that the *Multiplier* in uch Order as has been taught in Addition and Subraction, *viz.* Units under Units, Tens under Tens, *&c.* and draw a Line under them.

As if it were required to multiply 324 by 2, I ſet hem down as followeth, *viz.*

The *Multiplicand*	324
The *Multiplier*	2

Then I begin with the Place of Units, ſaying, times 4 is 8, which I put under the Line; then times 2 is 4, which I alſo put under the Line; nd 2 times 3 is 6, which I alſo put under the Line; nd the Work is finiſhed: So that I find 324 being ultiplied by 2, produceth 648, as by the followg Work.

The *Multiplicand*	324
The *Multiplier*	2
The *Product*	648

XI. When the *Product* of any ſingle Figure ounts to 10, or a certain Number of Tens, then u are to ſet down a Cypher, and carry a Unit every Ten to the Product of the next Figure; if it comes to above 10, or any Number of Tens, then ſet down the Exceſs, and carry an Unit for every Ten, &c. as in the following Example.

Let it be required to multiply 785641 by 5.

The Number being ſet down according to the Tenth Rule, I begin, ſaying 5 times 1 is 5, which I put under the Line, and proceed, ſaying, 5 times 4 is 20, wherefore I put down 0, and carry 2 for the 2 Tens to the next, ſaying, 5 times 6 is 30, and 2 that I carried is 32, wherefore I put down 2, and carry 3 from the 3 Tens to the next Figure, ſaying, 5 times 5 is 25, and 3 that I carried is 28, wherefore I put down 8, and carry 2 to the next, ſaying, 5 times 8 is 40, and 2 that I carry is 42, ſo I put down 2, and carry 4 to the next Figure, ſaying, 5 times 7 is 35, and 4 that I carry is 39, which being the laſt Figure, I pu down 39 under the Line, and ſo the Work is finiſhed, and I find that 785641 being multiplied by 5 the Product is 3928205, as appears by the whol Work in the Margent.

$$\begin{array}{r}785641\\ 5\\ \hline 3928205\end{array}$$

And here, by the Way, Note, *That Multiplication is a Compendious Performance of Addition*; for i the laſt Example, if inſtead of multiplying 785641 by 5, I put down the Multipli and 5 Times in Order one under the other, and add them all together, then will the Sum of them amount to the Product that was found by the foregoing Work of Multiplication, as appears by the Work in the Margent. The ſame may be performed by any other Example.

$$\begin{array}{r}78564\\ 78564\\ 78564\\ 78564\\ 78564\\ \hline 392820\end{array}$$

Other *Examples* for this Rule for Practice may be ſuch as follow.

748046	570084	7115083
4	6	8
2992184	3420504	56920664
72190	35726	145796
9	5	10
649710	178630	1457960

XII. When the *Multiplier* conſiſts of divers Places, then muſt there be as many *particular Products* as there are Places therein, and for the true placing of each Product, obſerve to put the firſt Figure or Place of Units under its proper *Multiplier*, and when you have done, draw a Line under the whole Work, and add the *ſeveral Products* together, and their Sum will be the total *Product* required.

Example I.

Let it be required to multiply 46753 *by* 46.

Having placed the given Numbers in order to the Work, according to the Tenth Rule of this Chapter, and draw a Line under them, as you ſee in the Margin; I begin to multiply with the 6, ſaying, 6 times 3 is 18, wherefore I put down 8 under the Line, and carry 1 to the next, ſaying, 6 times 5 is 30, and 1 that I carry is 31, &c. ſo that the Product by 6 is 280518. Then I begin with the 4, ſaying, 4 times 3 is 12, wherefore I put down 2 (under the Line, and under the Figure 4, by which

46753
46
280518
87012
150638

which I multiply (and carry 1 for the Ten to the next, ſaying, 4 times 5 is 20, and 1 that I carry is 21; wherefore I ſet down 1, and carry 2 to the next, *&c.* and I find the ſingle Product by 4 to be 187012, aud ſo the Multiplication is ended: Then I draw a Line under theſe Two particular Products, and add them together in the Order as they ſtand, and the Sum is 2150638, which is the true Product of 46753 being multiplied by 46, that is, 46 times 46753, is 2150638, and is equal to the Sum of 46753, being ſet 46 times one under another and added together. Behold the whole Work of Multiplication in the Margent.

Example II.

Let it be required to multiply 5800846 *by* 478.

Firſt, I diſpoſe of the given Numbers in order to the Operation, according to the Tenth Rule foregoing.

Then I begin and multiply the whole *Multiplicand* by (the firſt Figure of the *Multiplier*) 8, and the Product thereof is 46406768; then I multiply the ſame again (by the ſecond Figure of the Multiplier) 7, and the Product thereof, 40605922, the firſt Figure whereof, *viz.* 2 I place under the 7 by which I multiply. Then I proceed to multiply by 4, and the Product thence ariſing is 23203384; the firſt Figure whereof, which is 4, I place under 4, by which I multiply, and all the reſt in their Order, and ſo the whole Work of *Multiplication* is finiſhed; Then I draw a Line under all, and add up the ſeveral Products, and their Sum is 2772804388, which is th Total Product.

```
   5800846
       478
 ---------
  46406768
 40605922
23203384
----------
2772804388
```

A General Rule in Multiplication is chiefly to obſerve, That in whatſoever place the Figure of the Multiplier (whether a Cypher or Cyphers) ſtand from the Place of Units, in the ſame Place muſt the firſt Figure of that Multiplication be ſet from the Unit of the Multiplicand.

And ſince the greateſt Difficulty in Multiplication ariſes from having a Cypher or Cyphers in the Multipliers, I ſhall endeavour to make it plain and eaſie by the following Examples.

Example I.

Where there is one or more Cyphers in the Multiplier betwixt ſignificant Figures.

(2)	(1)
45793	8465008
507	4006
320551	50790048
2289650	3386003200
23217051	33910822048

In the firſt Example, you ſee that the Cyphers are put at the ſame Diſtance from the Unit of the Multiplicand that they ſtand in from the Unit of the Multiplier; as 4, the Fourth Figure of the Multiplier (the firſt Figure in that Multiplicand, which is 2) is ſet in the fourth Place from the Unit of the Multiplicand.

Example II.

Where the Multiplyer hath one or more Cyphers to the Right Hand thereof.

(1)
546735
4620
10934700
3280410
2186940
2525915700

(2)
7645932
48000
61167456
30583728
367004736000

Or, *You may multiply by the ſignificiant Figures*, neglecting the Cyphers (*as in the ſecond Sum*) *as if there were none, only to the product annexed, as many* Cyphers *as there were Cyphers in the Multiplier.*

Example III.

Where the *Multiplicand* and *Multiplier* have each of them Cyphers at the Right Hand.

(1)
58400
760
3504000
408800
44384000

(2)
438700
67000
30709
26322
29392900000

Or, *You may* neglect the Cyphers (*as in the ſecond Sum*) *only to the Product annex as many Cyphers as there were Cyphers to the right Hand of the Multiplicand and Multiplier.*

XIII. When the Multiplier conſiſts of a Unit in the higheſt Place towards the Left-hand, and all the reſt Cyphers towards the Right-hand, as 10, 100, 1000, *&c.* then is the whole Work performed by annexing the Cyphers of the Multiplier to the Figures of the Multiplicand; as in the following Examples.

6507	6507	6507
1000	100	10
6507000	650700	65070

XIV. *It is neceſſary for all ſuch as would be dextrous and ready at* Arithmetick *to learn to multiply by theſe Compound Numbers following very readily at one Operation,* viz.

Exa. Mult.	574967	Mult.	842958
by	11	by	12
	fa. 6324637		*fa.* 10115496
	345786		859427
	110		120
Product	38036460		*fa.* 103131240
	7504675		3217295
	12		12
	90056100		38607540

Here 574967 is multiplied by 11 thus, 11 times 7 is 77, put down 7, and carry 7; and then 11 times 6 is 66, and 7 I carry is 73, put down 3, and carry 7, then 11 times 9 is 99, and 7 I carry is 106, put down 6, and carry 10; then 11 times 4 is

44, and 10 I carry is 54, put down 4 and carry 5; then 11 times 7 is 77, and 5 is 82, put down 2, and carry 8, then 11 times 5 is 55, and 8 I carry is 63; which put down to the Product of 574967 multiplied by 11 is found to be 6324637.

In like manner to multiply 842958 by 12, ſay, 12 times 8 is 96, put down 6, and carry 9, then 12 times 5 is 60, and 9 I carry is 69, put down 9, and carry 6, and ſo proceed till you have gone through your Sum.

To multiply any Number by 110, or 120, put down a Cypher, and multiply as before.

Multiply	425760	Multiply	543760
by	12000	by	1200
Product	5109120000	*fa.*	652512000

The Proof Multiplication.

XV. When you would prove the Truth of your Work in Multiplication, firſt, with your Pen make a Croſs, then add the Figures of the Multiplicand together, not conſidering their Value as to the Places they poſſeſs, but as if they were all Units, caſting away the Nines as often as may be, and put the laſt Remainder on the left Side of the Croſs made for that Purpoſe, then likewiſe add the Figures in the Multiplier together, caſting away the Nines as often as may be, and put the laſt Remainder on the right Side of the Croſs; then multiply theſe two Remainders one by another, and caſt away all the Nines out of their Product, and put the Remainder above the Croſs; then add together the Figures of the Product, caſting away the Nines as often as may be, and put the laſt Remainder under the Croſs, and then look if the Figure above the Croſs, and the Figure below the Croſs be equal, then is your Sum rightly performed, otherwiſe not.

As for Example: Let it be required to multiply 587464 by 465; when the Work is finiſhed, I find the Product to be 273170760, as by the following Work appears.

$$\begin{array}{ccc} & 6 & \\ 7 & \text{X} & 6 \\ & 6 & \end{array} \qquad \begin{array}{r} 587464 \\ 465 \\ \hline 2937320 \\ 3524784 \\ 2349856 \\ \hline 273170760 \end{array}$$

Now to prove whether the Work be rightly performed, I firſt make a Croſs as you ſee above, and then begin to add the Figures of the Multiplicand together, ſaying, 5 and 8 is 13, caſt away 9 and there reſts 4; then 4 and 7 is 11, caſt away 9 and there reſts 2; then 2 and 4 is 6, and 6 is 12, caſt away 9 and there remains 3; then 3 and 4 is 7, which I put down on the left Side of the Croſs: Then I add together the Figures of the Multiplier, as I did thoſe of the Multiplicand, and the laſt Remainder their is 6, which I put on the right Side of the Croſs; then do I multiply theſe two Figures together which ſtand on each Side of the Croſs, *viz.* 6 and 7, and their Product is 42, out of which I caſt the Nines as often as may be, and there remains 6, which I put on the Top of the Croſs. But the eaſieſt Way to caſt the Nines out of any Number, is to add the Figures together which conſtitute that Number, and their Sum is the Remainder when the Nines are caſt away as often as may be, ſo in this Example the Nines are eaſily caſt out of 42 (which is the Product of 6 by 7) for 42 is conſtituted of 4 and 2, whoſe Sum is 6; But if the ſaid Sum chance to come to more than 9, caſt 9 out of it, and put down the Remainder, ſo 8 times 7 is 56, the Sum of which Figures (5 and 6) is 11, out of which taking 9 there reſts 2; which is the true Remainder, when the Nines are caſt out of 56 as often as may be.

Now, in this Example, having put the ſaid Remainder 6, above the Croſs, I proceed to caſt away the Nine out of the Product, and there remains 6 likewiſe, which I put below the Croſs, and becauſe the Figure above and below the Croſs are equal, *viz.* each 6, and I conclude the Work to be truly performed.

But the true Proof of *Multiplication* is by *Diviſion*, as ſhall be taught in that Rule, this way by caſting away the Nines many times proving the Work to be true, when it is abſolutely falſe, but when it proveth not true this way, the Sum cannot be right.

CHAP. V.

Of DIVISION.

DIVISION *Teacheth to divide any Number into as may equal Parts as you pleaſe*, Or, It is that by which we diſcover how often one Number is contained in another.

II. In *Diviſion* there are always Three Numbers *certain*, and a fourth *accidental*.

III. Of the Three Numbers *certain*, Two are always given to find out a Third, *viz.* The one of the Numbers given is to be *Divided*, the other Number given, is that by which the firſt is *Divided*, and the

Number ſound out is the *Quotient*, and diſcovers how often the one Number is contained in the other.

IV. Therefore in this Rule are three remarkable Numbers, *viz.* The *Dividsnd*, the *Diviſor*, and the *Quotient*.

(1.) The *Dividend* is the Number given to be divided into equal Parts.

(2.) The *Diviſor* is the Number given by which the *Dividend* is to be divided, which declareth into how many equal Parts the *Dividend* is to be divided.

(3.) The *Quotient* is the Number invented by the Operation, and ſhews how often the *Diviſor* is contained in the *Dividend*.

And the *Remainder* is the Number which remains after the *Diviſion* is ended, which is uncertain, and is the Fourth accidental Number, I mentioned before.

As ſuppoſe 15 were given to be divided by 3, or 15 Shilling, to be divided amongſt 3 Men, here 15 is the *Dividend*, 3 is the *Diviſor*, and 5 is the *Quotient*, for 3 is contained in 15 juſt 5 times, without any *Remainder*, but if you were to divide 20 by 3, the *Quotient* would be 6, and the *Remainder* 2, for 3 is contained 20, 6 times, and 2 remains over.

In *Diveſion (by one Figure)* you are firſt to write down the *Dividend*, and then draw a crooked Line, and place the *Diviſor* on the left Hand thereof, then draw a Line under the *Dividend*, under which place your *Quotient*.

Example.

Let it be required to divide 45 by 9; here the *Quotient* is 5, becauſe 9 is contained in 45, 5 times, and theſe ought to be placed as followeth.

Dividend
Diviſor 9) 45
—
Quotient 5

V. When a Number is given to be divided by a ſingle Figure or Digit, if the firſt Figure of the *Dividend*, viz. (*that on the left Hand*) be bigger, or at leaſt equal to the *Diviſor*, you are to put a Point or Prick under the ſame, and proceed as followeth.

Example.

Suppoſe it were required to divide 6788 by 4, the given Numbers are placed as before directed, making a Prick under (6) the firſt Figure of the *Dividend*, which for Diſtinction ſake may be called the *Dividual*, as followeth.

Dividend
Diviſor 4) 6788
—
Quotient 1697

Note, In every *Diviſion* you are to obſerve this Method; firſt, To *Seek*; ſecond, To *Multiply*; thirdly, To *Subtract*.

As in the laſt Example, after you have writ down your *Dividend* and *Diviſor*, as was ſhewed you, firſt ſeek how often (or how many times) 4, which is the *Diviſor*, can you have in 6, which is the firſt Figure of the *Dividend* towards the left Hand; the Anſwer is once; which I place in the *Quotient* exactly under the 6, (as you ſee in the Operation of the Sum) and ſay, once 4 out of 6, there will remain 2, which 2 is two tens to the next Figure 7, and makes the new *Dividend* 27. Then ask again (*or ſeek*) how often 4, the *Diviſor*, can you have in 27? *Anſwer*, 6 times, which 6 place in the *Quotient* under 7, the ſecond Figure of the *Dividend*, then take 6 times 4, which is 24 out of 27, there will remain 3, which is three Tens to 8, the third Figure of the *Dividend*, and makes it 38. Then aſk again, how many times 4 can you have in 38? *Anſwer*, 9 times; which 9 place in the *Quotient* under 8, the third Figure of the *Dividend*; then take 4 times 9, which is 36, out of 38, there will remain 2, which is two Tens to the fourth and laſt Figure of the *Dividend*, and makes the 8 to be 28. Then *laſtly*, Seek how often the *Diviſor* 4 can you have in 28; *Anſwer*, 7 times, which I place under 8, the laſt Figure of the *Dividend*, and your Work is done; the *Quotient* being found to be 1697, which is the Number of times the *Diviſor* 4 is found in the *Dividend* 6788. Or if the ſaid Sum were to be divided between 4 Men, each Man's Share would be 1697 Pounds.

But to make this plain to any ordinary Capacity, I ſhall take the *Dividend* into pieces, to ſhew the Four ſeveral Operations of the laſt Sum, and then give you ſome Examples for your Practice therein.

Dividend
Diviſor 4) 6788
Quotient 1697

4) 6 27 38 28
1 6 9 7

If you take 1 time 4 out of 6, there will remain 2 to the ſecond Figure 7, which makes it 27; then 4 in 27, there will be 6 times, and 3 will remain to the third Figure 8, which makes it 38; then 4 in 38, there will be 9 times, and 2 will remain to the fourth Figure, which is 8, and make it 28; then 4 in 28 is 7 times, which place under 8, the laſt of your *Dividend*, and your *Quotient* will be 1697.

Examples for the Learner's Practice.

(1)	(2)	(3)
5) 712640	6) 721494	7) 42165
142528	120249	$6023\frac{4}{7}$

VI. *If you cannot take the Diviſor out of the Dividend*, as in the ſecond Example, then are you to put a Cypher in the Quotient, and reckon that Figure as ſo many Tens to the next, as before was ſhewed you in the laſt Rule.

Example.

6) 721494

120249

Say, 6 in 7 once, reſt 1, which makes the 2, 12; then 6 in 12, 2 times; then 6 in 1, 0 times, reſt 1, which makes the 4, 14; then 6 in 14, 2 times, reſt 2, which makes the 9, 29; then 6 in 29, 4 times, reſt 5, which makes the 4, 54; then 6 in 54, 9 times; ſo the Quotient is 120249.

VII. *If after you have divided, there remains any thing*, that which remains is called a Fraction, and muſt be placed at ſome diſtance from the laſt Figure of the Quotient in a leſſer Character, then draw a ſmall Stroke under it, and place your Diviſor under, as in the Example following.

(4)	(5)	(6)
7) 54935	8) 316495	9) 314256
$7847\frac{5}{7}$	$39561\frac{7}{8}$	$34917\frac{3}{9}$

VIII. *To prove your Diviſion,* Multiply your Quotient by the Diviſor, to which add the Remainder; if the Product be the ſame as your Dividend is, your Work is true.

8) 85436	7) 364153	9) 314254
$10679\frac{4}{8}$	$52021\frac{6}{7}$	$34917\frac{1}{9}$
Proof 85436	364153	314254

To prove this Example, where I to divide by 9, I multiply 7 the Unit of my Quotient, by 9, the Diviſor, which makes 63, and the Remainder I added to it, makes 64; ſo I put 4, and carry 6, and ſay 9 times 1 is 9, and 6 is 15, 5 and carry 1; then 9 times 9 is 81, and 1 I carry is 82, 2 and carry 8; then 9 times 4 is 36, and 8 is 44, 4 and carry 9; then 9 times 4 is 36, and 8 is 44, 4 and carry 9; then 9 times 3 is 27, and 4 is 31, which put down, ſo the Product is 314254, the Sum equal with the Dividend, which was to be proved.

IX. *But if the firſt Figure of the Dividend towards the left Hand, be leſſer than the firſt Figure of the Diviſor,* as if the Fifth and Sixth *Examples* of the Seventh Rule; then make the two firſt Figures your Dividual, and proceed as before.

Other Examples of Diviſion *by the foregoing Rules, with their Proofs.*

9) 51376	11) 413795	12) 413271
Quot. $5708\frac{4}{9}$	$37617\frac{8}{11}$	$34439\frac{3}{12}$
Proof 51376	413795	413271

To divide by 11, ſay, 11 in 41, 3 times, reſt 8, which makes the 3, 83; then 11 in 83, 7 times, reſt 6, which makes the 7, 67; then 11 in 67, 6 times, reſt 1, which makes the 9, 19; then 11 in 19, 1 time, reſt 8, which makes the 5, 85; then 11 in 85, 7 times, the Remainder is $\frac{8}{11}$, ſo the Quotient is 37617 $\frac{8}{11}$.

And after this manner you may divide any Number by 12, 120, or 1200, as in the following *Examples*, the *Multiplication Table* being ſo compoſed, as to aſſiſt you in the multiplying and dividing by 11 and 12 as readily as by any other ſingle Figure.

X. To divide any Number by 10, 100, or 1000, as many Chyphers as you have in your *Diviſor*, cut off ſo many Figures from the Firſt, &c. places of your *Dividend*, as in the following *Examples*.

1|0	4150|7	1|00	3142|67	1|000	91|437
Quot.	4150 $\frac{7}{10}$		3142 $\frac{67}{100}$		91 $\frac{437}{1000}$

IX. *But if the Figure of the Diviſor be more than a Unit, and Cyphers follow it*, in ſuch Caſes, as many Cyphers as you have in the Units of your *Diviſor*, cut off ſo many Figures from the Unit of your *Dividend*, and proceed to divide as in ſingle Figures.

	7|0)	5432|6	3|00) 84295|67
Quotient		776 $\frac{6}{70}$	28098 $\frac{167}{300}$
Proof		54326	8429567

Various Examples for the Learner's Practice.

	11|0) 372045|6	12|0) 412678|5
Quotient	$33822\frac{36}{110}$	$34389\frac{105}{120}$
Proof	3720456	4126785
	11|00) 62149|65	12|00) 814653|70
Quotient	$5649\frac{1665}{1100}$	$67887\frac{970}{1200}$
Proof	6214965	81465370

Diviſion *by two or more Figures,* being the hardeſt Leſſon in Arithmetick, muſt be heedfully attended by the Learner, for whoſe eaſe I ſhall endeavour to make the Way ſmooth, both by Rules and Examples.

XII. *When the Diviſor conſiſteth of more place than one,* then you are to ſet out ſo many Figures on the left Hand of the Dividend for a Dividual, and then put a Point under that Figure of the Dividual which ſtands next to the right Hand.

Then ſeek how often the firſt Figure towards the left Hand of the Diviſor, is contained in the Firſt Figure towards the left Hand of the ſaid Dividual, and place the Anſwer in the Quotient.

Then multiply the whole Diviſor by the ſaid Figure, ſo placed in the Quotient, and place the Product in order under the Dividual.

Which being done, ſubtract the ſaid Product from the Dividual, placing the Remainder below the Line.

Then put a Point under the next Figure of the Dividend, and annex it to the Remainder, ſo have you a new Dividual, with which you are to proceed as is before directed.

Example

Example I.

Let it be required to divide 8904 *by* 42.

Here the given Numbers being diſpoſed of according to the Fourth Rule of this Chapter, will ſtand as followeth.

42) 8904 (
  .

Then, becauſe there are 2 Places in the Diviſor, I take the two firſt Figures on the left Hand of the Dividend for a Dividual, which is 89, putting a Point under the 9, which is the Figure of the Dividual which ſtands next to the right Hand.

Then I ſeek how often the firſt Figure (4) of the Diviſor, is contained in the firſt Figure (8) of the Dividual, and the Anſwer is 2 times, wherefore I put 2 in the Quotient, and thereby I multiply the Diviſor 42, and the Product is 84, which I place in order under the Dividual 89, and ſubtract it therefrom, and the Remainder is 5.

Then I put a Point under the next Place, which is (0) and annex to the ſaid Remainder 5, and it makes 50 for a new Dividual, and then the Work will ſtand as followeth.

42) 8904 (2
  . .
84
—
50

In the next Place I ſeek how often I can have the firſt Figure of the Diviſor (which is 4) in the firſt Figure of the Dividual 50 (which is 5) and the Anſwer is 1 time, wherefore I put 1 in the Quotient, and thereby multiply the Diviſor 42, and the Product is 42, which I place in order under the Dividual 50, and ſubtract it therefrom, and the Remainder is 8, which I place in order under the Line, and thereto annex the next Figure of the Dividend, which is 4, (having firſt put a Point under it) and it makes 84 for a new Dividual, and then the Work will ſtand as followeth,

```
42)8904(212
    ...
   84
   ------
    50
    42
    -----
     84
     84
     ---
      0
```

3. Then I again ſeek how often the firſt Figure of the Diviſor (which is 4) is contained in the firſt Figure of the Dividual (which is 8) and the Anſwer is 2 times, wherefore I put 2 in the Quotient, and thereby multiply the Diviſor 42, and the Product is 84, which I place orderly under the Dividual 84, and ſubtract it therefrom, and there remains 0. So is the Operation ended, and I find that 8904 being divided by 42, the Quotient is 212, as by the foregoing Operation appeareth.

XIII. *When you have multiplied the Diviſor by the Figure placed in the Quotient*, if the Product chance to be greater than the Dividual, then you may be ſure that the Figure placed in the Quotient is too much; wherefore in ſuch a Caſe you muſt cancel that Figure, and in the room thereof put one that is leſs by an Unit, and if the Product be yet bigger than the Dividual, place yet a leſſer Figure than that in the Quotient, and then proceed as has been before directed.

Example

Example II.

Let it be required to divide 7868 by 37. The given Number being placed according to the former Direction, I begin the Work, and firſt I ſeek how often I can have 3; (the firſt Figure of the Diviſor) in 7 the firſt Figure of the Dividual, (having before put a Point under the 8) and the Anſwer in 2 times, wherefore I put 2 in the Quotient, and thereby multiply the Diviſor 37, and the Product is 74, which being ſubtracted from the Dividual 78, there remains 4, to which having annexed the next Figure of the Dividend (6) it makes 46 for a new Dividual. Then I proceed to ſeek how often 3 is contained in 4, and the Anſwer is 1 time, wherefore I put 1 in the Quotient, and thereby multiply the Diviſor 37, and the Product is 37, which being ſubtracted from the Dividual 46, the Remainder is 9, to which the next Figure of the Dividend being annexed, *viz.* 8, it makes 98 for a new Dividual. Then I proceed to ſeek how often I can have 3 in 9, and the Anſwer is 3 times, wherefore I put 3 in the Quotient, and thereby I multiply the Diviſor 37, and the Product is 111, which is more than the Dividual, whereby I perceive that I have put a Figure too big in the Quotient; therefore, according to the Directions given in the foregoing Rule, I cancel the 3, and inſtead thereof I place a 2, and then multiply the Diviſor thereby, and the Product is 74, which is leſſer than the Dividual, wherefore I make Subtraction, and there remains 24; and ſo having never another Figure to bring down from the Dividend, I conclude the Work to be ended, and the Quotient thus found is 212, as by the following Operation appears.

2d. **Example,** 37) 7868 (212
$\dot{}\dot{}\dot{}$
74
46
37
98
$\cancel{1}1\cancel{1}$
74
Remainder (24)

Anne Perry
her Book 1769

And here Note, That if at any time it ſo happens, that after you have multiplied the Diviſor by the Figure laſt placed in the Quotient, and Subtracted the Product from the Dividual, if the Remainder be greater than the Diviſor, the Figure laſt placed in the Quotient is too little, and therefore it muſt be cancelled, and a bigger Figure placed in its room. What is to be done with the Remainder after Diviſion is ended, ſhall be ſhewed in its due place, but only for the preſent let it ſuffice to underſtand, That it is the Numerator of a Fraction, which is part of the Quotient, the Diviſor being the Denominator to the ſame. So the true Quotient of the laſt Diviſion is $212\frac{24}{37}$. But more of this hereafter.

XIV. *When* (according to the Directions given in the laſt Rule) *you have aſſigned your* Dividual *to conſiſt of as many Places as the* Diviſor *containeth Places,* if then the Dividual be leſs than the Diviſor, (ſo that the Diviſor cannot be ſubtracted therefrom) you are then to annex another Figure thereto, ſo that then it will conſiſt of one Place more than the Diviſor hath Places, and then you are to ſeek how often the firſt Figure of your Diviſor is contained in the two firſt Figures of the Dividend; and then Proceed according to the Rules before delivered.

The like is to be obſerved in the middle of your Work if the Dividual chance to conſiſt of one Figure more than the Diviſor, as in the following Example.

Example III.

Let it be required to divide 4763585 by 587.

Here, becauſe the Diviſor 587 conſiſteth of 3 Places, therefore I ſhould take the three firſt Figures to the left Hand of the Dividend for a Dividual, which is 476, but becauſe 476 is leſſer than the Diviſor 587, I therefore put another Figure thereto, and then I have 4763 for a Dividual, and having firſt put a Point under the Figure 3, I begin the Diviſion, and firſt I ſeek how often 5 (the firſt Figure) of the Diviſor, is contained in 47 (the two firſt Figures of the Dividend) which I find to be 9 times, but having tryed according to the Thirteenth Rule of this Chapter, I find 9 is too much, but it will bear 8, wherefore I put 8 in the Quotient, and having multiplied the Diviſor thereby, and ſubtracted the Product from the Dividual, according to the Direction given in the Twelfth Rule of this Chapter, I find the Remainder to be 67, to which I annex the next Figure of the Dividend, which is 5, having firſt put a Point under it (according to the ſaid Twelfth Rule) and then I have 675 for a new Dividual. Then I ſeek how oft 5 (the firſt of the Diviſor) is contained in 6, (the firſt of the Dividend) and the Anſwer is 1, which I put in the Quotient, and having multiplied and ſubtracted, I find the Remainder to be 88, to which annexing the next Figure in the Dividend, it makes 888 for a new Dividual, then I ſeek, &c. and after Subtraction, there is a Remainder of 301, to which annexing the next and laſt Figure of the Dividend which is 5, it makes 3015 for a Dividual, which conſiſteth of one Place more than the Diviſor, therefore, according to the latter Part of the Fourteenth Rule, I ſeek how often 5 is contained in 30, and by tryal, according to the Tenth Rule, I find it will bear 5 times, wherefore I put 5 in the Quotient, and having multiplied and ſubtracted, I find the Remainder to be 80, and the Work is ended, and I find the Quotient to be $8115\frac{80}{587}$. See the following Work.

3d. *Exam.* 587)4763585

Quot. 8115

4696 . . .
675
587
888
587
3015
2935
080 **Remainder.**

4th. *Exam.* Divide 72164375 by 9437

9437) 66059 . . . (7646 Quot.
61053
56622
44317
37748
65695
56622
Remainder 9073

Thus have I run through one ſort of *Diviſion*, and I hope by this time the Learner is able to divide any Number given; and here let him take notice once for all, that there muſt never be brought down but one Figure or Cypher at one time from the *Dividend*, to be annexed to the Remainder for a new *Dividual*, and for every ſuch Figure or Cypher ſo brought down, there muſt be a Figure or Cypher put in the Quotient.

I might give you many more Examples of *Diviſion*, wherein the *Diviſor* may conſiſt of 4, 5, 6, 7, 8, 9, 10, *&c.* places, but the Method being the very ſame with what is before delivered, I ſhall therefore forbear, and only admoniſh the Learner to be perfect in the foregoing Rules, and to practice well the Examples therein delivered; and for further Practice, I ſhall give you the Quotents of Four other Examples, but ſhall omit the Operation as a Whetſtone for the Learner's Ingenuity.

If you *divide* 2459337266 by 384, the Quotient is 6404524, and the Remainder, after the Work is finiſhed, 50.

And if you *divide* 49267345806877 by 5846793, the Quotient will be 8426387, and there will be a Remainder of 5279986

Or if you *divide* 107925884216 by 1998573, the Quotient will be 54001, and there will be a Remainder of 943643.

Alſo if you *divide* 2395096414141498 by 297864, the Quotient will be 8040905964, and there will be a Remainder of 80602.

There is yet a much ſhorter (way of) Diviſion, by omitting to ſet down the Multiplication of your *Diviſor* (as is done in the foregoing Examples) and in this you multiply and ſubtract together: In which way the Quotient is placed under the *Diviſor*, as being moſt ready and convenient for the working of any Sum. And being the moſt accurate and ready way of Diviſion, I ſhall purſue this Method through the remaining Part of this Book, after I have given three or four Examples of one, and the ſame Sum *divided* by both Ways for the Learner's Eaſe and Practice.

Let us divide the two laſt foregoing Sums by this ſhort *Italian* Way of Diviſion, *viz.* the third and fourth Examples.

Firſt of all, Let it be required to divide 4763585 by 587, being the third Example.

Firſt, I proceed and ask the Queſtion, as was ſhewed you in the third Example of this Rule, and ſay, how often 5, the firſt Figure of the Diviſor, can I have in 47, the firſt Figures of the Dividend? Anſwer, 8 times. Then multiply 7, the Unit Figure of your Diviſor, by 8, the Figure which you bring in your Quotient, and ſay, 8 times 7 is 56 out of 3 (the Fourth Figure of the Dividend) I cannot, but 56 out of 63, reſt 7, and carry 6 to the ſecond Figure of the Diviſor. Then multiply again, and ſay, 8 times 8 is 64, and 6 I carried is 70, out of 6 I cannot, but 70 out of 76, reſt 6, and carry 7 to the firſt Figure of the Diviſor; then multiply again, and ſay 8 times 5 is 40, and 7 I carried is 47, out of 47 reſt 0. So that by this Operation you find after 8 times 587 is taken out of 4763, there will remain 67, to which I take down 5, the next Figure of my Dividend, for a new Dividend.

```
587) 4763585
———
 8     675
```

Then I proceed again, and ſay, how often 587 (my Diviſor) can I have in 675, my Dividend? The Anſwer is once, which I put in the Quotient, and multiply as before, and ſay once

7, out of 5 I cannot, but 7 out of 15, reſt 8, and carry 1; then once 8 is 8, and 1 is 9, 9 out of 7 I cannot, but 9 out of 17 reſt 8, and carry 1; then once 5 is 5, and 1 I carry is 6, 6 out of 6, there reſts (0) which I omit to place down, becauſe a (0) on the left Hand is inſignificant: Then to the Remainder 88 I take down 8, the next Figure of my Dividend, and it makes my new Dividend 888.

```
587) 4763585
         ..
----
81     675
        888
```

Then I proceed again, and aſk, How often 587 my Diviſor, can I take out of 888, my Dividend? the Anſwer is once, which 1 I put in the Quotient, and ſay, once 7 out of 8 reſt 1; then once 8 is 8, out of 8 reſt 0; then once 5 out of 8 reſt 3; ſo the Remainder of that Diviſion is 301, to which I take down 5, the next Figure of my Dividend, which makes my new Dividend 3015.

```
587) 4763585
         ...
----
81     675
        888
        3015
```

Then I proceed and aſk again, how often 587 I can have in my laſt Dividend? The Anſwer is 5 times, which 5 I place in my Quotient, and multiply as before, and ſay, 5 times 7 is 35, out of 5 I cannot, but 35 out of 35 reſt 0, and carry 3; then again 5 times 8 is 40, and 3 I carry is 43, out of 1 I cannot, but 43 out of 51, reſt 8, and carry 5; then laſtly, 5 times 5 is 25, and 5 I carry

carry is 30, 30 out of 30 reſt 0. So my Remainder of this laſt Diviſion is 80, which I cut off with a Stroke from the reſt of the Work to ſignifie it to be a Remainder, and the whole Operation of the Sum ſtands as followeth.

Example I.

Dividend.
Diviſor 587) 4763585
Quotient 8115
675
888
3015
80 Remainder

Example II.

9437) Divide 72164375 by 9437
61053..
44317
65695
9073
Quotient 7646
56622
37748
56622
66059
72155302
9073
72164375 Sum Proof, — the Dividend.

So that 72164375 Proof, is to multiply the Quotient by the Diviſor, and to the Product add the Remainder.

Example

Examples of the ſhort Italian *Way of Diviſion for the Learners Practice, with their Proofs.*

29754) 148975182 8835

• • • • • • • •

02021828
2365528
2827063
1491495

3765

Quotient 5006795
297546

30040770
20027180
25033975
35047565
45061155
10013590

148975182 5070

3765 Remainder. Add

148975182 8835 Proof.

The ſame Examples after the long Italian *Way of Diviſion, with their Proofs.*

297546) 148975182 8835 (5006795
• • • • • • • •

1487730

2021828
1785276

2365528
2082822

2827063
2677914

1491495
1487730

Remainder 3765

To prove your Diviſion.

1. Multiply your Quotient by your Diviſor (and to the Product add your Remainder, if any be) the Sum of all added together, will be equal to your Dividend, if your Work be true. Or,

2. You may take the ſeveral Products that are placed under each Dividual (in this Way of Diviſion) and place them in the ſame Order as they there ſtand in reſpect to one another, and to their Sum add the Remainder, and the Proof will ſtand as followeth.

```
1487730
 1785276
  2082822
   2677914
    1487730
        3765 Remainder.
────────────
148975182835 { Sum, = the laſt Di-
             { vidend for Proof.
```

Or, You may alſo prove Diviſion by caſting out the Nines; thus,

Firſt, Make a Croſs, then caſt the Nines out of your Diviſor, and place the Remainder on the left Side of the Croſs: Then caſt your Nines out of your Quotient, and place the Remainder oppoſite to the other, on the right Side of the Croſs. Multiply theſe two Figures together, and out of your Product caſt the Nines, the Overplus carry to the Remainder, and continue to caſt out all the Nines therefrom, and the Remainder above Nine place on the Top of the Croſs.

Laſtly, Caſt the Nines out of your Dividend, and f that Remainder comes to be the ſame Figure with hat placed on the Top, your Sum is true; then place that laſt Figure at the Bottom of your Croſs.

But

But the moſt certain Proof of Diviſion (as I ſhewed before) is by Multiplication, and the moſt certain Proof of Multiplication is by Diviſion, they interchangeably proving each other.

For if you divide the Product by the Multiplicand, the Quotient will be equal to the Multiplier.

If you divide the Product by the Multiplier, the Quotient will be equal to the Multiplicand.

An Example or two will make this Proof of Diviſion plain.

		(1)		(2)
		Dividend.		
Diviſor	754)	912673	457)	159137
		1586		2203
Quotient	1210	787	348	3757
		333		101

In the Firſt of theſe two laſt Example my Diviſor is 754, Quotient is 1210, Remainder is 333, and Dividend 912673. *To prove which,* make a Croſs, as in the Margent: Then caſt the Nines out of the Diviſor, there will remain 7, which I place on the left Side of the Croſs, then caſt the Nines out of the Quotient, reſt 4, Multiply 7 by 4, it makes 28, caſt out the Nines, reſt 1, which I carry to the Remainder, and ſay 1 and 3 is 4, and 3 is 7, and 3 is 10, caſt out 9, reſt 1, which I place above the Croſs.

1
7 X 4
1

Laſtly, Caſt the Nines out of your Dividend, and there will reſt 1, which place under the Croſs, and your Sum is true.

XV. When the Diviſor conſiſteth of any other Number with a Cypher or Cyphers annexed thereto, then Cut-off the Cyphers of the Diviſor with a daſh of the Pen, and as many Cyphers as you cut off from the Diviſor, ſo many Places muſt you cut off from the Dividend; then proceed to divide by the remaining Figures in the Diviſor, as if there were no ſuch Cyphers or Figures of the Diviſor, or Dividend as you cut off, and if nothing remain after Diviſion is ended, then ſhall the Figures you cut off from the given Dividend be the true Remainder; but if any Thing do remain after Diviſion is ended, you are there to annex the Figures of the Dividend that were before cut off, ſo ſhall the ſaid Remainder, with the Figures annexed thereto, be the true Remainder.

Example.

Divide 486793 by 15000. Firſt, I cut off the three Cyphers of the Diviſor, and alſo three Places of the right Hand of the Dividend. ſo have I 15 for my Diviſor, and 486 for my Dividend, *viz.*

```
15|000) 486|793 (32
        45
        ---
         36
         30
         --
          6
```

The ſame ſhort Way of Diviſion.

```
15|000) 486|793
-----------  36
 32           6
```

Here I find the Quotient to be 32, and the Remainder is 6, to which annexing the Figures cut off from the Dividend, *viz.* 793, it makes 6793 for the true Remainder.

Having thus enlarged and finiſhed the firſt Fundamental Rules of *Arithmetick*, their Application ſhall be more particularly Taught in the following Chapters.

CHAP. VI.

Of REDUCTION.

I. REDUCTION *teacheth to reduce Numbers, whether Money, Weight, Meaſure, Time, Motion,* &c. *from one Denomination to another, diſcovering the ſame Value, but in different Terms.*

II. The whole Work of Reduction is performed by Multiplication and Diviſion.

III. All great Denominations are brought into leſſer of the ſame Value by Multiplication, and this is by ſome called *REDUCTION DESCENDING.*

IV. All ſmall Denominations are brought into greater of the ſame Value by ~~Reduction~~, and this is by ſome called *REDUCTION ASCENDING.*

Diuision

V. *To reduce greater Denominations into leſſer of the ſame Value.* Conſider how many of the Leſſer are equal to one of the Greater, and multiply the given Number thereby, ſo ſhall the Product be the Anſwer to the Queſtion.

Example.

Reduce 3468 *Shillings into Pence.*

3468
12

Fac. 41616 Pence.

Here I conſider that 12 Pence is a Shilling, and the Pence ought to be 12 times the Number of Shillings, wherefore I multiply by 12 at one Operation,

tion, according to the Fourteenth Rule of the Fourth Chapter, and the Product is 41616 Pence, as in the Margent.

VI. *To reduce Smaller Denomination into Greater.* Conſider how many of the Smaller are equal to one of the Greater, and divide thereby; the Quotient is the Anſwer to the Queſtion.

Example.

Reduce 41616 *Pence into Shillings.*

12) 41616
———————
Fac. 3468 ſhill.

Firſt, Conſider that 12 Pence is a Shilling, and that the Shillings onght to be a twelfth Part of the Pence; wherefore I divide the given Number by 12 at one Operation, as was ſhewed you in the Eleventh Rule of the Fifth Chapter, and ſay, 12 in 41, 3 times, reſt 5 to the 6 makes it 56, then 56, 4 times, reſt 8; which makes the 1 81; then 12 in 81, 6 times, reſt 9, which makes the 6 96; then 12 in 96, is 8 times, and the Quotient gives me 3468 Shillings, which is the Anſwer to the Queſtion, and may ſerve for a Proof of the foregoing Example.

Note, I would adviſe the Learner to inure himſelf to the moſt ſhort and ready ways of Multiplication and Diviſion, which will very muſt contract the Operations in Reduction, *viz.* In Reduction of Money, to multiply the Shillings by 12 at one Operation, as in Chap. IV. of Multiplication, Rule Fourteenth. And likewiſe to divide by 12 at one Operation, as in the 9th and 11th Rules of the Fifth Chapter.

For your further Aſſiſtance in Reduction, you ought to have reſpect to the Table of *Coin, Weight, Meaſure*, &c. delivered in the Second Chapter.

Example I.

In 685 *l. I demand how many Shillings, Pence, and Farthings ?*

685 *Pounds.*
20
———
13700 *Shill.*
12
———
164400 *Pence.*
4
———
Fa. 657600 *Farth.*

Firſt, I multiply by 20 (becauſe 20 Shill. is a Pound, and the Product is 13700 Shillings, then I multiply the Shillings by 12, (becauſe 12 Pence is a Shilling) and the Product is 164400 Pence; then I multiply the Pence by 4, (becauſe 4 Farthings is a Penny) and the Product is 657600 Farthings; as in the Margent.

This or any other Number of Pounds might be reduced into Pence or Farthings at one Operation, without reducing it into the intermediate Denominations.

For if you multiply Pounds by 240 (becauſe ſo many Pence make a Pound) the Product will be Pence; and if you multiply Pounds by 960 (becauſe 960 Farthings is a Pound) the Product will be Farthings: So in the foregoing Example 685 *l.* being multiplied by 240, the Product you will find to be 164400 Pence, and if you multiply 685 *l.* by 960, the Product will be 657600 Farthings, for the Reaſons before ſaid.

20 *Shill.*
12
——
240 *Pence.*
4
——
960 *Farth.*
one Pound.

But you may ſay, you cannot well remember how many Pence or Farthings make a Pound, I will therefore teach you how to find it out at any time when you have Occaſion. You may eaſily remember that 20 Shillings is a Pound, and that multiplied by 12, produceth 240 Pence, which being multiplied by 4, produceth 960 Farthings, as in the Margent.

Example II.

In 657600 *Farthings, I demand how many Pence, Shilling and Pounds?*

This Queſtion is the Reverſe of the Former, and may ſerve for a Proof thereof: Firſt, I divide the Farthings by 4, and the Quotient is 164400 Pence, then I divide the Pence by 12, and the Quotient is 13700 Shillings, and the Shillings I divide by 20, and the Quotient is 685 Pounds; which is equal to the given Number in the firſt Example. See the whole Operation as followeth:

4) 657600 *Farthings.*

12) 164400 *Pence.*

2|0) 1370|0 *Shillings.*

Facit 685 *Pounds.*

VII. *When in Reduction Deſcending*, the Number propounded to be reduced conſiſteth of divers Denominations, as of Pounds, Shillings, Pence and Farthings, or of Pounds, Ounces, Penny-weights and Grains, *&c.* then you may readily reduce it into the the loweſt Denomination: Thus when you reduce an higher Denomination into the next inferiour, add to the Product the expreſſed Parts into which you reduce it, as if you were to reduce Pounds into Shillings, add to the Product (as you multiply) the Shillings that are expreſſed in the Number propounded; proceed in the ſame Method till you have reduced the given Number into the Denomination required, as in the following Example.

Example III.

Reduce 567 *l.* 15 *s.* 6 *d.* $\frac{3}{4}$ *into Farthings.*

Firſt, I multiply by 20 to bring into Shillings, ſaying, 0 times 7 is 0, but 5 is 5 (taking in the 5 that is in the Place of Units in the Rank of Shillings, and ſetting it in the Place of Units in the Product; then 2 times 7 is 14, and 1 is 15, (taking in the 1 that is in the Place of Tens in the Rank of Shillings) ſo I ſet down 5 in the Place of Tens in the Product, &c. the Product is 11355 Shillings; then I multiply the Shillings by 12 to bring them into Pence, ſaying, 12 times 5 is 60, and 6 is 66, (taking in the 6 that ſtands in the Rank of Pence) &c. and the Pence make 136266; then I multiply my Pence by 4, to bring them into Farthings, ſaying, 4 times 6 is 24, and 3 is 27, taking in the 3 which ſtands in the Rank of Farthings, &c. ſo the Farthings amount to 545067, as by the whole Operation appeareth, *viz.*

567 *l.* — 15 *s.* — 6 *d.* $\frac{3}{4}$
20

11355 *Shillings.*
12

136266 *Pence.*
4

545067 *Farthings.*

Obſerve the like in any other Example.

VIII. *When in Reduction Aſcending* any thing remains after Diviſion is ended, it is always of the ſame Denomination with the Dividend, as in the following Example.

Example IV.

In 545067 *Farthings, I demand how many Pounds.*

Firſt, I divide the given Number of Farthings by 4, and the Quotient is 136266 Pence, and there remains 3, which is 3 Farthings, becauſe the Dividend was Farthings.

Then I divide the Pence by 12, and the Quotient is 11355 Shillings, and there remains 6, which is 6 Pence, becauſe the Dividend was Pence.

Then I divide the Shillings by 20, and the Quotient is 567 *l.* and there remains 15, which is Shillings, becauſe the Dividend was Shillings: So that I find by the Work, 545067 Farthings to be 567 *l.* 15 *s.* 6 *d.* $\frac{3}{4}$, as by the following Work.

4) 545067

12) 136266 $\frac{3}{4}$

2'0) 11355 : 6 *d.*

Fac. lb|567 : 15 *s.* 6 *d.* $\frac{3}{4}$

This Queſtino is the Inverſe of the Third Example, and may very well ſerve for a Proof thereof, as you may obſerve at your Leiſure.

Here by the way take Notice, That when you are (to divide any Number by 20, that is) to bring Shillings into Pounds, the beſt way is to cut off a Figure to the right hand for Shillings, and then to take half the Figures to the left Hand for Pounds, and if 1 remain, it is 10 Shillings to be added to the Figure firſt cut off. For Example.

Where 11355 *Shillings is to be reduced into Pounds*, I cut off the laſt Figure 5 for Shillings, and ſay Half of 11 is 5, Half of 13 is 6, Half of 15 is 7, and there remains 1, which make the 5 Shillings to be 15 Shillings; and this Method ſhall be obſerved hereafter.

1134 *l.* 5 *s.* 0 *d.*

Fac. 567 - 15 - 0

Note, Once for all, That *Reduction Aſcending* proves *Reduction Deſcending*, the one being a Reverſe to the other, as ſhall be demonſtrated in the enſuing Queſtions that follow in all the Varieties of *Reduction.*

In 7642 *l.* 17 *s.* 11 *d.* $\frac{1}{8}$, I *demand how many half Farthings?*
20

152857 *Shillings.*
12

1834295
8

Fac. 14674361 *half Farthings.*

Tun. C. qr. ℔.
Queſt. 1. *In* 95 : 11 : 3 : 15 *how many Pounds Averdupois Weight?*
20

1911 *Hundreds.*
4

7647 *Quarters.*
28

61181
15295

Facit 214131

Queſt.

C. *qr.* ℔. *oz.*
Queſt. 2. *In* 50 : 2 : 15 : 9 *how many*
4 (*Ounces?*

202
28

1621
405

5671
16

34035
5671

Facit 90745 *Ounces.*

By this you ſee, That if 50 *C.* 2 *qr.* 15 ℔. 9 *oz.* be multiplied according to the Directions given in the 7th Rule of this Chapter, the Product will be 90745 Ounces, which is the Reverſe or Proof of the ſecond Queſtion oppoſite to this on the Right-hand.

Queſt. 3. *In* 214131 *Pound Weight, how many*
28) 181 (*Tuns?*
133
4) 7647 211
2|0) 1911 $\frac{3}{4}$ 15 *Pounds.*

Proof 95 : 11 : 3 : 15. By this you ſee, That if 214131 Pound Weight be divided by 28, by 4, and 20, it produce 95 *Tun.* 11 *C.* 3 *qrs.* 15 ℔. which is the Reverſe of the firſt Queſtion on the Left-hand.

Queſt. 4. *In* 90745 *Ounces, how many Hundred (Weight ?*

16) 107
114
28) 5671 25
71
4) 202 9
15 *Ounces.*
C. 50 : 2 : 15 9 Proof.

oz. pw. gr.
Queſt. 5. *In* 50 : 10 : 11 *how many Grains (of Silver ?*

Troy Weight } 20
1010
24
4041
2021
Facit 24251 *Grains of Silver.*

oz. pw. gr.
Queſt. 6. *In* 507 : 10 : 11 *how many Grains (of Silver ?*

Troy Weight } 20
10150 *Penny Weight.*
24
40601
20301
Facit 243611 *Grains.*

Tuns.

Tun. hhd. gall.

Queſt. 7. *In* 54 : 2 : 25 *how many Quarts of*

Liquid Meaſure 4 *(Wine ?*

218 *hhead.*

63

659

1310

13759 *gallons.*

4

Proof 55036 *quarts.*

Laſt. qr. buſh. gall.

Queſt. 8. *In* 75 : 5 : 3 : 2 *how many Gallons*

Dry Meaſure 10 *(of Wheat ?*

755 *quarters.*

8

6043 *buſhels.*

8

Facit 48346 *gallons.*

Queſt. 9 *In* 243611 *Grains, how many Ounces*

24) 36 *(of Silver ?*

121

2|0)1015|0

11

Proof 507 : 10 *pw.* 11 *Grains.*

Queſt. 10. *In* 55036 *Quarts, how many Tuns of (Wine?*
4)
63) 13759
115
4) 218 529
54 25 *Gall.*
Facit. 54 : 2 *hh.* 25 *Gall.*

2. *In* 48346 *Gallons, how many Laſts of (Wheat?*
8)
8) 6043 : 2
1|0) 75|5 : 3
Proof 75 : 5 : 3 : 2

By the foregoing Examples, the Learners may be ſufficiently inſtructed in the working and proving any Sum in *Reduction*. I ſhall forbear to give you any more Examples of this Nature, my Deſign being to improve the remaining Paper with Matter more uſeful, after I have given three or four more Examples in *Cloth Meaſure*, and *Reduction of Time*.

Cloth Meaſure.

Queſt. 11. *In* 207 *Ells*, 2 *Quarters*, 2 *Nails, (how many Nails?*
5
1037 *Quarters.*
4
Fa. 4150 *Nails.*

Queſt. 12. *In* 107 *Yards*, 3 *Quarters*, 1 *Nail*, (*how many Nails*?

4

431 *Quarters*.

4

Fa. 1725 *Nails*.

Queſt. 13. *In* 312 *Ells* Flemiſh, 2 *Quarters*, *how* (*many Quarters*?

3

938 *Quarters*.

Queſt. 14. *In* 112 *Aulns*, 1 *Quarter*, 2 *Nails*, *how* (*many Nails*?

6

673 *Quarters*.

4

Fa. 2694 *Nails*.

Note, An Auln here is reckoned 1½ Yard.

Long Measure.

Queſt. 15. *The Circumference of the Earth being* 360 Degrees, *and every Degree* 60 Engliſh *Miles, I demand how many Miles, Furlongs, Perches, Inches, and Barley-Corns will reach round the World?*

360	*Degrees.*
60	*Miles a Degree.*
21600	*Miles about the Earth.*
8	
172800	*Furlongs about the Earth.*
40	*Perches in a Furlong.*
6912000	*Perches about the Earth.*
33	*Half Feet in a Perch.*
20736	
20736	
228096000	*Half Feet about the Earth.*
6	*Inches in a half Foot.*
1368576000	*Inches.*
3	*Barley Corns in an Inch.*
4105728000	*Barley Corns about the Earth.*

[illegible] Earth [illegible]
Twenty Five Thousand [illegible] Miles.

Queſt. 16. *I demand how many Days, Hours, and Minutes it is ſince the Birth of our Saviour Jeſus Chriſt, to the Year 1723.*

1723 *Years.*
365 *Days in one Year.*

8615
10338
5169

628895 *Days ſince the Birth of Chriſt.*
34 *Hours in one Day.*

2515580
1257790

15093480
10338 *Hours add.*

15103818 *Hours ſince the Birth of Chriſt.*
60 *Minutes in an Hour.*

906229080 *Minutes ſince the Birth of Chriſt.*

1723
6

10338 *Hours to be added.*

Note, That 6 Hours is loſt in every Year; to correct which, you multiply the Number of Years to be reduced by 6, and the Product will give you the Hours to be added to the given Time, as you may ſee in the Example above.

REDUCTION (according to the firſt Rule of this Chapter) teacheth you alſo to reduce the Coins, Weights, and Meaſures of one Country into the Coins, Weights, and Meaſures of any other Country. As for Example:

I have bought 3507 Ells Flemiſh of Genting Cloth, I would know how many Ells Engliſh is contained therein?

The moſt Practical way to work this, is to multiply the Ells *Flemiſh* by 6, and divided by 10, which contracts the Work, becauſe to divide by 10, is only to cut off the laſt Figure of the Dividend. And the Reaſon is this, there are 6 half Quarters of a Yard in an Ell *Flemiſh*: And there are 10 half Quarters of a Yard in an Ell *Engliſh*: The Work ſtands, *viz.*

3507 *Ells* Engliſh.
6 *Fac.* 2104 $\frac{2}{10}$, *which is equal to the* $\frac{1}{5}$, *the Quarter of a Yard* Engliſh.
2104|2

Queſt. 17. *In* 4215 $\frac{1}{2}$ *Ells* Flemiſh, *how many Ells* Engliſh?
6
Ells Engliſh.
2529|3 *Fa.* 2529 *and* $\frac{3}{10}$, *or three half Quarters.*

Queſt. 18. *In* 295 *Ells* Engliſh, *how many* Portugal *Veres of* 15 *Nails?*
20
15) 5900
140
393 50
Veres.
5. *Fac.* 393 $\frac{5}{15}$ *or* $\frac{1}{3}$.

s. d.
Queſt. 19. *In* 205 *Piſtoles, at* 17 : 6 *how many Pound Sterl.*
210 12
205 210
410
24|0) 4305|0 *Pence in all the Piſtoles.*
90
179 225
Reſts 9 *Fac.* 179 *l. and* 90 *Pence.*

Queſt. 20. *In an Ingot of Silver, Quantity* 24 ℔. 7 oz. *how many Salvers, Quantity* 12 oz. ½ ?

℔. oz.
24 7
12 12 ½ 12 ½ [illegible]
295 25
2
25) 590 *Half Ounces.*
90
23 — *Fac.* 23 *Salvers, and* 15 *half Ounces.*

Queſt. 21. *In* 142 *C.* 3 *qrs.* 19 ℔. *of Sugar how many Boxes of* 84 ℔. ?

4
571
28
4577
1143
84) 16007 *Pound Weight.*
190 760
Boxes. ℔.
Reſts 47 *Fac.* 190 *and* 47 *of Sugar.*

Queſt. 22. *In* 35 *l.* 11 *s.* 4 *d. how many* Dollar
(*at* 4 *s.* 6 d

20 12
711 54
12
54) 8536
313
158 436
4 *Fac.* 158 *Dollars and* 4 Pence

Queſt. 23. *In* 75 *Hogſheads of Wine, how* many
63 (*Rundlets of* 22 *Gallons*

225
450
22) 4725
32
214 105
Rundl.
17 *Fac.* 214 *and* 17 *Gallons.*

Queſt. 24. *In* 905 *Guineas, at* 21 s. 10 d. $\frac{5}{8}$, *how*
many Piſtoles at 17 s. 6 d.

s. *d.* *s.* *d.*
905 —— 21 : 10 $\frac{5}{8}$ —— 17 : 6
2101 12 12
905 262 210
905 8 8
1810 2101 1680
168|0) 190140|5
1131) 221
534
300
Piſtoles.
Reſts 1325 *Fac.* 1131 *and* 1325 *half* Far

Queſ

Quest. 25. *Bought at* Bourdeaux 10 *Pieces of* *uens, and Quantity* 95 *Quintals, I demand how* *any* C. *Weight it makes in* London?

95 *Note,* 100 ℔. *is a Quintal.*
100

112) 9500
540
84

C. ℔.
92 *Fac.* 84—92 *in* London.

Quest. 26. *A Merchant at* London *receives an In-* *oyce from his Correspondent at* Jamaica *of several* *ogsheads of Sugar, Quantity* 195 C. 1 q. 16 ℔. Jamaica, *I demand what Weight they produce at* ondon?

C. qrs. ℔.
195—1—16
4

781
25

3911
1563

112) 19541
834
174 501

Rests 53

c c 174—53 *in* London.

CHAP.

CHAP. VII.

The Golden Rule: or, Rule of Three Direct

I. THE *Rule of Three* is ſo called, becauſe i it there are always *Three Numbers* given to find out a Fourth. It is alſo called the *Golden Rule*, for its excellent Performances in the Art of Numbers.

II. The *Rule of Three* is either *Single* or *Compound.*

III. The *Single Rule of Three* is either *Direct*, o *Inverſe.*

IV. The *Single Rule of Three Direct*, is when the are *Three Numbers* given to find out a *Fourth* in a direct Proportion; that is, when the *Fourth* Numbe ought to bear ſuch Proportion to the *Third* as th *Second* doth to the *Firſt*; or, as the *Firſt* is in proportion to the Second, ſo is the *Third* to the *Fourth* This is called a *Direct Proportion.*

V In the *Single Rule of Three*, the two firſt of th given Numbers imply a Suppoſition, and the thir a Demand.

VI. The *Three given Numbers* muſt be ranked i ſuch Order, as that the Number to which the Demand is affixed, may poſſeſs the *Third* Place, and tha Number in the Suppoſition, that is of the ſam Name, Kind, or Quality with that in the *Third* Plac muſt poſſeſs the *Firſt* Place, and the other Numbe in the Suppoſition muſt poſſeſs the *Second* Place, an is evermore of the ſame Name, Kind, or Quali with the Number ſought.

Example. *If* 18 *Yards of Camblet coſt* 72 *s. wha will* 596 *Yards coſt at that Rate?*

In this Example the Suppoſition is this, *viz.* If 18 Yards coſt 72 Shilings. And in the other Number (596) is implied a Demand, *viz.* What will 596 Yards coſt? Therefore muſt 596 Yards be the third Number, and that Number in the Suppoſition which is of the ſame Kind with 596 muſt be the firſt Number, which here is 18, becauſe that ſignifieth Yards as well as the third Number; and the other Number in the Suppoſition, which here is 72, is the ſecond Number, and is of the ſame Kind with the fourth Number, or Number ſought; for the Number ſought by the Queſtion is the Price of 596 Yards, and the ſecond Number is the Price of the *Firſt*, *viz.* 72 Shilligns. Now the given Number being duly ſtated and ranked according to the foregoing Directions, will ſtand thus:

yrds. *s.* *yrds.*
18——72——596

VII. *In the Single Rule of Three Direct, if you Multiply the Second Number by the Third, or (which is all one) the Third Number by the Second, and divide the Product thereof by the Firſt, the Quotient thence ariſing is the Fourth Proportional Number ſought, or Anſwer to the Queſtion.* As in the foregoing Example, *viz.* If 18 Yards of Camblet coſt 72 Shillings, what will 596 Yards coſt at that Rate? The Number given in the Queſtion being ranked according to the Directions given in the Sixth Rule, multiply the Second Number (72) by (596) the Third Number, and the Product is 42912, which being divided by (18) the Firſt Number, the Quotient is 2384, which is the Fourth Number or Anſwer to the Queſtion. See the whole Operation as followeth, *viz.*

```
yards.            s.                yards.
18 give ———————— 72 ———————— what will 596
                                        72
                                       ———
                                      1192
                                      4172
                                     —————
                              18) 42912
                                  ....
                        Fac. 2384   69
                                   151
                                    72
                                   ———
                                     0
```

VIII. When (according to the foregoing Directions) you have found out the *Anſwer* to the *Queſtion*, you are always to eſteem it of the ſame Name that your ſecond Number was of, or reduced to. So here in the foregoing Example, the *Anſwer* to the *Queſtion* is 2384 *Shillings*, becauſe the ſecond Number is 72 *Shillings*. And if the ſecond Number had been reduced into Pence, it makes 864, and then the *Anſwer* would have been 28608 *Pence*, as by the following Operations appears.

```
yards.            s.                    yrds.
18 give ———————— 72 ———————— what will  596
                 12                      864
                ———                      ———
                864                     2384
                                       3576
                                      4768
                                     ——————
                              18) 514944
                                  154
                     Fac. 28608.  109
                                   144
                                   ———
                                     0
```

Fac. 28608 Pence equal to 2384 Shillings.

Likewiſe if the ſecond Number had been reduced into Farthings, it would have been 3456, which being multiplied by (596) the Third Number, the Product is 2059776, which being divided by (18) the firſt Number, the Quotient is 114432 *Farthings*, equal to 119 *l.* 4 *s.* as before, which you may prove at your Leiſure.

IX. When the ſecond Number conſiſteth of divers Denominations; as, of Pounds and Shillings, or of Pounds, Shilling and Pence, then you muſt reduce it to the loweſt Name mentioned, or lower if you pleaſe, and then multiply the Second by the Third, and divide the Product by the Firſt, *&c.* as before directed.

Example.

If 26 Yards of Broad Cloth coſt 12 l. 02 s. 08 d. *What will 248 Yards of the ſame coſt at that Rate?*

The given Numbers in the *Example* being ranked according to the *Directions* given in the Sixth Rule aforegoing, will ſtand thus:

yds.	*l.*	*s.*	*d.*	*yds.*
26	12	02	08	248

Hence the ſecond Number conſiſteth of divers *Denominations*, *viz.* Pounds, Shillings, and Pence, therefore muſt it be reduced to the loweſt Name mentioned, which is Pence, and it makes 2912, which being multiplied by (248) the third Number, the Product is 722176, which being divided by (26) the firſt Number, the Quotient is 27776 Pence, becauſe the ſecond Number was reduced into Pence, which is the Anſwer to the Queſtion, and may be reduced to 115 *l.* 14 *s.* 08 *d.* As you may ſee by the following Operation.

```
yrds.                l.     s.     d.       yrds.
 26 ———— ————give  12 ——— 02 ——— 08 ——— what 248
                   20
                 ————
                  242
                   12
                 ————
                 2912
                  248
                 ————
                23296
               11648
               5824
               ——————
      26)      722176
     ————       202
 12) 27776 d.   201
     ——————     197
2|0) 231|4 : 8  156
 ——————————   ————
  115 : 14 : 8    0

   l.     s.   d.
Fa. 115 : 14 : 08
```

X. If the Firſt and Third Numbers, or either of them, conſiſts of divers Denominations, then muſt they be both reduced to the loweſt Denomination mentioned in either of them, as if the Firſt Number be Hundred Weights only, and the Third be Hundreds, Quarters, and Pounds, then muſt they be both reduced into Pounds, becauſe Pounds are mentioned in the Third Number. Or if the Firſt and Third Numbers being of one Kind, are notwithſtanding of different Denominations: then muſt they be reduced to one Denomination, as if the Firſt be Pounds, of Weight and the Third be Hundred Weights, then muſt the third Number be reduced to Pounds as is the Firſt.

Example III.

If 1 C. *Weight of Tobacco coſt* 4 l. 5 s. 2 d. *what will* 34 C. 3 qrs. 18 ℔. *coſt at that Rate?*

In this Example, becauſe the third Number has Pounds mentioned therein, therefore muſt the firſt and third Numbers be both reduced to Pounds, and the ſecond Number, which is 4 *l.* 5 *s.* 02 *d.* muſt be reduced into Pence by the Fifth Rule of Chap. V. and then the ſecond Number being multiplied by the Third, the Product is 3996020, which being divided by the Firſt, the Quotient is 35678 Pence, which is equal to 148 *l.* 13 *s.* 02 *d.* and 84 remaineth: and how that or any other ſuch like Remainder may be ordered, ſhall be taught by and by. See the following Operation.

	l.	s.	d.	C.	qu.	℔.
112 cost	4	5	2	34	3	18
	20			4		
	85			139		
	12			28		
	1022 Pence.			1120		
				279		
				3910		
				1022		
				7820		
				7820		
				39100		
	112)			3996020		
				636		
	12) 35678			760		
				882		
	297|3 : 2 d.			980 : 84 Reſts.		

Facit 148 : 13 : 2 $\frac{84}{112}$

Examples.

If 14 ℔. *of Sugar coſt* 5 s. 3 d. *what will* 46 C. *Weight coſt at that Rate?*

In this Example the third Number muſt be reduced into Pounds, becauſe the firſt Number is Pounds. and it makes 5152, and the ſecond Number muſt be reduced into Pence, making 63, then the ſecond Number being multiplied by the third, the Product is 324576, which being divided by (14) the firſt Number, the Quotient is 23184 Pence, for the Anſwer; which is equal to *96 l.* 12 *s.* as by the following Operation appears.

```
 lb.         s.       d.               C.
14 —— — Sugar 5 ——— 3 —————————— 46
             12                      112
                                     ———
                                      92
                                     506
                                     ———
                                    5152
                                      63
                                    ————
                                   15456
                                  30912
                                  —————
                            14) 324576
                  12) 23184——44
                  —————————   25
                     193|2    117
                     —————     56
                               ———
```

Facit 96 *l.* 12 *s.* 0 *d.*

XI. When you have multiplied the ſecond Number by the third, and divided the Product thereof by the firſt, if any thing remain after Diviſion is ended, it is part of an Unit in the Quotient, and its Value may be found out thus, *viz.*

Multiply the ſaid Remainder by the Parts of the next inferiour *Denomination*, that are equal to an Unit of the Quotient, and divide that Product by the firſt Number, ſo ſhall the *Quotient* be the Value of the ſaid Remainder in the ſaid Parts, and if any thing yet remain, multiply it by the Parts of the next inferiour *Denomination*, that are equal to an Unit of the laſt *Quotient*, and divide the Product by the ſaid Number, &c. Proceed thus till you have brought it as low as you deſire; And if any thing remain at laſt of all, it is the Part of an Unit of the leaſt Denomination, into which you reduce the ſaid Remainder, and muſt be placed according to the Direction given in the Fourth Rule of the Fifth Chapter.

In the third Example foregoing, after the Diviſion is ended, there is a Remainder of 84, which ſheweth that the Anſwer to the Queſtion is not exactly 35678 Pence, or 148 *l.* 13 *s.* 02 *d.* as it is there found, but it is ſomething more; therefore to find the value of this Remainder 84, I multiply it by 4, (becauſe 35678 the ſaid Quotient is Pence) and the Product is 336, which I divide by the firſt Number 112, and the Quotient is 3 Farthings, without any other Remainder, and ſo is the true Anſwer to that Queſtion 148 *l.* 13 *s.* 02 *d.* $\frac{3}{4}$. Mind the Operation of the next Example.

Ann

Example V.

If 1 C. *Weight of Currans coſt* 2 l. 14 s. *what will* 24 C. 3 qrs. 16 ℔. *coſt at that Rate?*

```
℔.      l.        s.          C.     qrs.     ℔.
112 ——— 2 ———— 14 .          24 ——— 3 ——— 16
        20                    4
        ——                   ——
        54                   99
                             28
                            ———
                            798
                           199
                           ————
                           2788
                             54
                          —————
                          11152
                         13940
                         ——————
            112)         150552
                         . . . .
        Shill.  1344     385
       {        ————      495
Facit  { Pence     2      472
       {        ————      ————
        Fart.      2        24
                            12
                           ———
                           288
                           ———
                            64
                             4
                           ———
                           256
                    Reſ's   32
```

In the Work of the foregoing Example, you may obſerve that the ſecond Number is reduced no lower than Shillings, making 54; therefore the Quotient is 1344 Shillings, equal to 67 *l.* 4 *s.* and there is a Remainder 24: Therefore, to find out how many Pence is contained therein, I multiply it by 12, and the Product is 288, which being divided by 112 (becauſe that is the firſt Number) the Quotient is 2 Pence, and there is a Remainder of 64, which I multiply by 4, (to find its Value in Farthings) and the Product is 256, which I divide again by 112, and the Quotient is 2 Farthings, and there is a Remainder of 32, which according to the Fourth Rule of Chapter VI. is $\frac{32}{112}$ of a Farthing; and ſo the Anſwer to the Queſtion 67 *l.* 4 *s.* 2*d.* 2 *qrs.* $\frac{32}{112}$. The like may be obſerved of any other.

Example VI.

If 24 *Yards of Camblet coſt* 4 l. 16 s. *I demand how many Yards I may buy for* 126 l. *Facit* 360 Yards. The Terms being ranked as is directed in the Sixth Rule of this Chapter, will ſtand thus, *viz.*

```
 l.      s.      yards.        l.
 4 ——— 16 ——— 24 ————— 126
 20                        20
 ——                      ————
 96                      2520
                           24
                        —————
                        10080
                        5040
                       ——————
               96)     60480
                        ...
               ———
               630      288
                       ————
                         00
```

Having thus demonſtrated the Reaſon of the *Single Rule of Three Direct* in the Six foregoing Examples, I ſhall proceed now to propoſe ſeveral Queſtions in the *Rule of Three* for the Learner's Practice, and only ſet down their *Facits*, as a further Help to them in the working of their Queſtions.

Queſtion. 1. If an Ounce of Silver coſt 5 *s.* 4 *d.* what will 46 *oz.* 15 *pw.* 12 *gr.* coſt? *Facit* 12 *l.* 09 s. 5 d. $\frac{288}{480}$.

Queſt. 2. If 12 Yards of Broad-cloth coſt 7 l. 6 s. I demand how much I ought to give for 26 Pieces, each Piece containing 27 Yards? *Facit* 427 l. 1 s.

Queſt. 3 If 18 Yards of *Cambrick* coſt 4 l. 13 s. I demand the Price of 73 Pieces, each Piece containing 34 Ells *Flemiſh*? The Ell *Flemiſh* being 3 quarters of a Yard. *Facit* 480 l. 17 s. 9 d.

Queſt. 4. If 17 C. 3 qrs. 17 ℔. of Tobacco coſt 145 l. 12 s. I demand how much the Ounce ſtands me in at that Rate? *Facit* 1 d. $\frac{12864}{32080}$ *per.* Ounce.

Queſt. 5. If 112 ℔. of Lead coſt 15 s. 11 d. I demand the Price of 54 Fother, each being 19 C. $\frac{1}{2}$.? *Facit* 838 l. 0 s. 3 d.

Queſt. 6. When 7 ℔. of Tobacco coſt 5 s. 9 d. $\frac{1}{2}$. what will 30 C. Weight coſt? *Facit* 139 l.

Queſt. 7. When the Tun of Wine coſt 51 l. 14 s. what coſt the Quart at that Rate? *Facit* 12 d. $\frac{1}{4}$.

Queſt. 8. At a Noble *per* Week, how many Months Board may I demand for 50 l? *Facit* 37 Months and 2 Weeks.

Queſt. 9. A Grocer bought 30 Frails of Raiſins, each Frail weighing 91 ℔. Weight, at 18 s. 8 d. *per.* C. I demand how much they amount to? *Facit* 22 l. 14 s. 7 d. $\frac{1}{2}$.

Queſt. 10. What comes the Commiſſion of 462 l. 11 s. 0 d. to, at 3 $\frac{1}{2}$ *per Cent.*? *Facit* 16 l. 3 s. 9 d.

Queſt. 11. What comes the Inſurance of 575 l. 9 s. 4 d. to, at 3 Guineas *per Cent.* the Guineas at 21 s. 9 d. $\frac{5}{8}$? *Facit* 12 l. 5 s. 6 d.

Queſt. 12. A Corn Factor bought 248 Quarters of Wheat for 511 l. 06 s. 04 d. for 100 Quarters of which he gave 33 s. 04 d. *per* Quarter, I demand how much he gave *per* Quarter for the Remainder? *Facit* 2 l. 6 s. 6 d. ½.

Queſt. 13. If a Piece of Cloth coſt 31 l. 5 s. I demand how many Yards were in the ſame, the Yard being valued at 12 s. 6 d.? *Facit* 50 Yards.

Queſt. 14. If a Piece of Cloth coſt 24 l. 5 s. 4 d. I demand how many Yards were contained in the ſame, when the Ell *Engliſh* is worth 17 s. 4 d.? *Facit* 35 Yards.

Queſt. 15. Bought 124 Pieces of Camblet for the Sum of 987 l. 14 s. 8 d. at 4 s. 8 d. *per* Yard, I demand how many Yards there were in all, and how many Ells *Flemiſh* there were in a Piece? *Facit* 4233 ⅐ Yards, and 45 ½ Ells *Flemiſh per* Piece.

Queſt. 16. A Gentleman hath an Eſtate of 1224 l. *per Annum*, and his Expences one Day with another amount to 1 l. 13 s. 4 d. I demand how much he layeth up at the Year's End to purchaſe with? *Facit* 615 l. 13 s. 4 d.

Queſt. 17. A Gentleman expendeth one Day with another 43 s. 6 d. ½. and at the Year's end layeth up 850 l. I demand his Annual Eſtate? *Facit* 1644 l. 12 s. 8 d. ½ *per Annum*.

Queſt. 18. Bought 3 Hogſheads of Nutmegs, *viz.* at 5 s. 7 d. the Ounce, I demand the Neat coſt thereof? Quantity being as follows.

Amy Perry Was Born
in the year of 1770
Decber the [illegible] 1775.

No.	C.	qr.	lb.
1	3	2	21
2	4	1	14
3	4	2	18
	12	2	25

4

50
28

405
102

1425
16

8550
1425

Ounces 22800 at 5 s. 7 d. *Facit* 6365 l.

Quest. 19 A Mechant consigns to his Factor in *Spain* 188 Cloths, with Commission for Sale at 23 l. 2 s. 2 d. *per* Cloth, and to make Returns from thence, the one half in Wines at 28 l. *per* Tun, and the other half in Sugar at 27 s. *per* C. Weight, I demand how much of each ought to be returned for the Cloths?

Answer, The whole Value of the Cloth is 4344 l. 7 s. 4 d. the half whereof is 2172 l. 2 s. 8 d. which will buy 77 $\frac{3884}{6720}$ Tuns of Wine at 28 l. *per* Tun, and the other Half will buy 1609 [illegible] Hundred Weight of Sugar.

Quest. 20. If 100 l. in 12 Months gain 6 l. Interest, what will be the Interest of 806 l. for the same Time? *Facit* 48 l. 7 s. 2 d ½.

Queſt. 21. An Uſurer putteth out 889 l. to Intereſt, and at the End of 12 Months he receives for Principal and Intereſt 942 l. 6 s. 9 d. 2$\frac{2}{5}$. I demand at what Rate *per Cent. per Annum* he received Intereſt? *Facit* 6 *per Cent.*

Queſt. 22. I demand what Principal in 12 Months will gain 64 l. 10 s. at the Rate of 6 *per Cent.*? *Facit* 1075 l.

Queſt. 23 An Orphan is indebted to his Guardian 51 l. and the Gardian having in his Hands 180 *l.* of the Orphan's, it is agreed between them, that the Guardian ſhall keep the ſame in his Hands till the ſaid 51 l. be paid by the Intereſt thereof at 6 *per Cent. per Annum.* Now I demand how long he ought to keep the ſame at that Rate? *Facit* 4 Years 8 Months $\frac{3}{5}$.

Gain and Loſs.

Queſt. 24 A Draper buys 2795 $\frac{1}{2}$ Ells *Flemiſh* of Genting, at 22 d. $\frac{1}{2}$ the Ells *Engliſh*. It is required to know at what Price the Cloth muſt be ſold out to gain 15 l. 10 s. *per Cent.*? Firſt find the Price it coſt by the Rule of Three, 157 l. 4 s. 11 d. Then ſay, if 100 l. give 15 l. 10 s. what will 157 l. 4 s 11 d.? *Facit* 24 : 7 : 5, which add to 157 : 4 : 11, makes 181 : 12 : 4. Or if 100 ℔. give 115 . 0, what will 157 : 4 : 11? *Facit* 181 l. 12 s. 4 d. which is anſwered at one Operation.

Loſs and Gain.

Queſt. 25. If the aforeſaid Cloth were to be ſold, ſo as to loſe 15 l. 10 s. *per Cent.* Firſt ſubtract 15 l. 10 s. out of a 100 l. *Facit* 84 l. 10 s. Then ſay If 100 l. fall to 84 l. 10 s. what ſhall 157 l. 4 s. 11 *d.*? *Facit* 132 l. 17 s. 6 d.

Fellowſhip.

Queſt. 26. Three Merchants Company; *A.* hi Stock was 175 l. 12 s. *B*'s 215 l. 19 s. 4 d. *C*' 150 *l.* 11 s. 9 d, they have gained together 209

11 s. 4 d. I demand each Man's Part of the ſaid Gain? Firſt add the ſeveral Stocks into one Total, which makes 541 l. 3 s. 1 d. then make Three ſeveral Queſtions in the Rule of Three, *viz.*

l. s. d. l. s. d. l. s. d.
If 541 : 3 : 1 give 209 : 11 : 4 what 175 : 12 : 0 *A*
If 541 : 3 : 1 give 209 : 11 : 4 what 215 : 19 : 4 *B*
If 541 : 3 : 1 : give 209 : 11 : 4 what 150 : 11 : 9 *C*

Facit

Add all the Facits together, if it make up the Money to be divided, your Sum is true. If you have any Remains on the Diviſions, add them up into one Total, which divide by the common Diviſor, and the Quotient add to the loweſt Denomination.

Fellowſhip with Time.

Queſt. 27. Three Merchants Company. *A*, his Stock was 109 l. 5 s. for 3 Months. *B*'s 450 l. 7 s. for 4 Months. *C*'s 147 l. 12 s. for 6 Months, they have gained 209 l. 7 s. 2 d. I demand each Man's Part?

This is worked as the laſt precedent Queſtion, only each Man's Srock is multiplied by the time, *viz.*

A. 105—05 *B* 450—7 *C* 147—12
3 $^{mo.}$ 4 $^{mo.}$ 6 $^{mo.}$

A 327—15 *B* 1801—8 *C* 885—12
B 1801—08
C 885—12

l. s. d. l. s.
If 3014 : 15 gain 209 : 7 : 2 what will 327 : 15 *A*
If 3014 : 15 gain 209 : 7 : 2 what will 1801 : 08 *B*
If 3014 : 15 gain 209 : 7 : 2 what will 885 : 12 *C*

Facit

Add all the *Facits* together, and if it make the given Sum 209 l. 7 s. 2 d. your Work is true, otherwiſe falſe.

The Proof of the Single Rule of Three Direct.

To prove a Queſtion in the *Single Rule of Three Direct*, multiply the fourth Number (or Anſwer to the Queſtion) by the firſt, and if the Product thereof be equal to the Product of the Second and Third, then is the Operation truly performed, otherwiſe not; as in the firſt Example of this Chapter, *viz.*

If 18 Yards coſt 72 Shillings, what will 596 Yards coſt at that Rate? The Anſwer there found is 28608 Pence, which is the fourth Number. Now the Product of the Firſt and Fourth, *viz.* 28608 by 18, is 514944, which is equal to the Product of the Second and Third, *viz.* 864 by 596, as you may ſee by the following Operation, where the ſecond Number, *viz.* 72 Shillings is reduced into 864 Pence.

```
yrds.       d.          yrds.         d.
 18 ——————— 864 ——————— 596 ——————— 28608
            596                        18
          ——————                    ———————
           5184                     228864
          7776                      28608
         4320                      ———————
        ———————                     514944
         514944
```

And here Note, That if any Thing remain after Diviſion is ended, it muſt be added to the Product of the firſt and fourth Numbers; and then muſt that Sum be equal to the Product of the Second and Third. As in the third Example of this Chapter, which is, If 1 *C.* Weight of Tobacco coſt 4 *l.* 5 *s.* 2 *d.* what will 34 *C.* 3 *qrs.* 18 ℔. coſt?

The 3 given Numbers being reduced, are 112 l. 1022 d. and 3910 l. and the fourth Number or Anſwer to the Queſtion is there found to be 35678 d. and the Remainder is 84; the Product of the ſecond and third, is 3996020; and the Product of the firſt and fourth, is 3995936, to which adding the Remainder, the Sum is 3996020, equal to the Product of the ſecond and third, which proves the Work to be true.

```
 l.          d.              l.            d.
112———  ——1022———  ———3910————————35678
                          1022            112
                         ————           ————
 112      1022            7820           71355
                         7820           25678
          112           39100          35678
                       ——————         ——————
                       3996020        3995936
                       Remains   add       84
                                      3996020
```

CHAP. VIII.

The Single Rule of Three Inverſe.

I. THE *Single Rule of Three Inverſe*, is when the fourth Number, or Number ſought, ought to bear ſuch Proportion to the Firſt, as the Second doth to the Third.

II. When a Queſtion in the *Single Rule of Three* is ſtated, conſider whether the fourth Number (or Anſwer to the Queſtion) ought to be more or leſs than the ſecond Number, which upon a little Conſideration you may diſcover. If it ought to be more than the Second then muſt the leſſer Extream be the Diviſor, and if it ought to be leſſer than the

Lodwick Rees is Book

the Second, then muſt the biggeſt of the Extreams be the Diviſor, in this Caſe the Firſt and Third Numbers are called Extreams) and if it fall out that the Third Number is the Diviſor, that Queſtion is ſaid to be of *The Single Rule of Three Inverſe*: As in the following Examples.

Example I.

If 30 *Men can build a Wall in* 32 *Days, I demand in how many Days* 60 *Men may do the ſame?*

The given Numbers being ranked according to the ſixth Rule of the ſeventh Chapter, will ſtand as followeth:

Men *Days* *Men*
30 ——— 32 ——— 60

Then I conſider whether 60 Men will do it in more or leſs Days than 42, and find that they will require leſs Time than 32 Days (for the more the Men, the leſſer the Time) wherefore 60, which is the biggeſt Extream, muſt be the Diviſor, and the Firſt and Third muſt be multiplied together, and their Product, which is 960, being divided by the third Number 60, the Quotient is 16 Days, and in ſo long Time will 60 Men finiſh the ſaid Work. See the following Operation.

Men *Days* *Men.*
30 ——— 32 ———60
30
———————————
6|0) 960
————————
Fac. 16 *Days.*

Example II.

Example II.

If 100 *l. in* 12 *Months gain* 10 *l. for the Intereſt thereof, I demand what Principal will gain the ſame Intereſt in* 8 *Months?*

Here it being required what Principal will gain 10 *l.* in 8 Months, therefore muſt 100 *l.* Principal be the ſecond Number, according to the Directions in the ſixth Rule in the ſeventh Chapter, and the Numbers being ranked accordingly, will ſtand thus:

Mon. *l.* *Mon.*
12———100———8

Here I conſider, that the ſhorter the Time, the more muſt be the Principal to gain the ſame Intereſt; wherefore the leſſer Extream muſt be the Diviſor, which here is (8) the third Number, therefore the Firſt and Second, *viz.* 12 and 100 muſt be multiplied the one by the other, and the Product is 1200, which being divided by (8) the third Number, the Quotient is 150 *l.* and ſo much will gain 10 *l.* Intereſt in 8 Months at 10 *per Cent. per Annum.* See the following Work.

```
12———100———8
      12
    ------
  8) 1200
    ------
 Facit 150
```

Example III.

Lent my Frind 120 l. *for* 6 *Months, he promiſing to do me the like Courteſie another time; and not long after I had occaſion for a Sum of Money for* 9 *Months, I demand how much he ought to lend me for that time, to retaliate my former Kindneſs?*

Facit 80 l. The longer the Time, the Leſſer ought the Sum of Money to be.

Example IV.

A Footman performs a Journey in 12 *Days, when the Day is* 15 *Hours long, I demand in how many Days he may perform the ſame when the Day is* 10 *Hours long?*

Facit 18 Days. The ſhorter the Days, the more Days will the Journey require.

Example V.

How many Yards of Matting, that is half Yard wide, is enough to cover a Floor that is 16 *Foot wide, and* 28 *Foot long?*

Facit $298\frac{2}{3}$ Yards of Matting.

Example VI.

Suppoſe that (according to the Statute) when the Buſhel of Wheat coſt 4 s. *the Penny-Loaf ought to weigh* 9 *Ounces, I demand what the Price of the Buſhel ought to be, when the Penny-Loaf weigheth* 12 *Ounces?*

Facit 3 s. per Buſhel.

Example VII.

If when the Tun of Wine coſt 45 l. *a certain Quantity worth* 25 s. *is ſufficient for the Accommodation of* 20 *Men, I demand how many Men the ſame* 25 s. *worth will ſuffice when the Tun is worth* 30 l.?

Facit 30 Men; for cheaper the Wine, the more may be bought for the ſame Money.

Example VIII.

If when the Tun of Wine coſt 45 l. *a Quantity worth* 50 s. *is enough for the Entertainment of* 40 *Men, I demand the Price of the Tun when* 50 s. *worth is enough for* 90 *Men?*

Facit 20 l. per Tun.

Example.

Example IX.

If 60 *Ells at* London *be equal to* 100 *Ells at* Antwerp, *and each Ell at* London *contains* 20 *Nails of an* English *Yard, I demand how many ſuch Nails the Ell of* Antwerp *contains?*

Facit 12, for 100, 60, 20, 12, in Direct proper, or 60, 20, 100, 12, in an Inverſe Proportion.

Example X.

If for 5 l. 3 s. 4 d. *I can have* 10 C. *Weight carried* 140 *Miles, I demand how many Miles I may have* 14 C. *Weight carried for the ſame Money?*

Facit 100 Miles.

The Proof of the Single Rule of Three Inverſe.

If the Product of the Fourth Term multiplied by the Third, be equal to the Product of the Second multiplied by the Firſt, then is the Work truly performed, otherwiſe not.

Let us prove the firſt Example of this Chapter, *viz. If* 30 *Men can build a Wall in* 32 *Days, I demand how many Days* 60 *Men may do the ſame?* This Anſwer there found to be 16 Days, and the Four Terms being duly ranked, ſtand as followeth.

Men	*Days*	*Men*	*Days*
30	32	60	16
32			60
960			960

The fourth Term (16) being multiplied by (60) the third Term is 960, which is equal to the Product of (32) the ſecond Term, by (30) the firſt.

CHAP.

CHAP. IX.

The Double Rule of Three Direct.

I. THe Double Rule of Three, is when there are five Numbers given to find out a Sixth in proportion thereunto.

II. A Queſtion in the Double Rule of Three may be reſolv'd by two ſingle Rules of Three, or by *One Rule compoſed of the five given Numbers*.

III. When a Queſtion in the Double Rule of Three may be ſolved by two Single Rules of Three Direct, that Queſtion is ſaid to belong to the Double Rule of Three Direct.

IV. Of the Five Numbers given in the Double Rule of Three, Three of them always imply a Suppoſition, as the othe other Two a Demand. As in the following Example:

If 16 Men can reap 96 Acres of Wheat in 36 Days I demand, how many Acres 64 Men may reap in 48 Days?

Here the Suppoſition is, *If, or ſuppoſe 16 Men reap 96 Acres in 36 Days*, and the Demand is, *How Acres 64 Men reap in 48 Days?*

V. When you would ſolve a Queſtion in the Double Rule of Three, the given Numbers are to be ſo ranked, that the Firſt and Third may be of one Denomination, and the ſecond Number muſt be of the ſame Quality, Name, or Denomination with the Number ſought; and Note, That the Firſt and Second Numbers muſt be always of the Suppoſition, and the Third of the Demand. So likewiſe muſt the fourth Number be of the Suppoſition, and the Fifth of the Demand, and both of one Denomination; ſo may each Queſtion be ſolved by two ſingle Rules of Three, two different Ways.

As in the Queſtion foregoing, which being again repeated, is as followeth.

If 16 Men can reap 96 Acres of Wheat in 36 Days, How many Acres may 64 Men reap in 48 Days? The Numbers being ranked according to the foregoing Directions, will ſtand as followeth.

Men *Acres* *Men*
16———————96———————64
Days 36———————————————48 *Days*

Or thus,

Days *Acres* *Days*
36———————96———————48
Men 16———————————————64 *Men*

VI. When a Queſtion in the Double Rule of Three is to be ſolved at two ſeveral Operations in the Single Rule of Three, the Anſwer to the firſt Queſtion muſt be the ſecond Number in the ſecond Queſtion, and the fourth and fifth Numbers muſt be the firſt and third in the ſecond Queſtion.

So in the firſt Order of ranking the given Numbers in the foregoing Queſtion, the three firſt Numbers are 16——96——64, where is implied this Queſtion, *viz. If 16 Man reap 96 Acres, How much may 64 reap in the ſame time, viz. in 36 Days?* Multiply and divide according to the Directions given in the Seventh *Rule* of the Seventh Chapter, and you will find the Anſwer to be 384 Acres; ſo that now I have found how many Acses 64 Men may reap in 36 Days; but by the Queſtion, it is required to know how much they can reap in 48 Days?

Therefore I ſay again by the Single *Rule* of Three *If 36 Days will reap 384 Acres, How many may be done in 48 Days?* Multiply and divide, and you will find the Anſwer to the Queſtion to be 512 Acres, and ſo many may 64 Men reap in 48 Days, if 16 Men can reap 96 Acres in 36 Days. See the whole Work as followeth.

Men

```
        Men           Acres           Men
         16————————————96————————————64
Days 36——————————————————————————————48 Days

16——96——64          |   Days     Acres     Days
        96          |     36——————384——————48
       ———          |              48
       384          |             ———
       576          |             3062
       ———          |            1536
  16) 6144          |            —————
  ———  134          |      36) 18432
Facit 384 Acres. 64 |      ———   43
       ———          |  Facit 512 Acr. 72
         0          |                ———
                    |                 0
```

In the ſecond ſtating of the above Work, I multiply 384, by 48 to ſave Paper; for if the two Numbers be multiplied together, it is indifferent whether the Multiplicand or Multiplier be placed uppermoſt.

Or if the Five given Numbers of the foregoing Queſtion had been ranked according to the Second Method laid down at the latter End of the Fifth *Rule*, the Anſwer would have been the ſame, and the Operation as followeth.

```
        Days          Acres          Days
         36————————————96————————————48
    Men 16———————————————————————————64

36——96——48          |   16——————128——————64
        96          |                   128
       ———          |                   ———
       288          |                   512
       432          |                  768
       ———          |                  ————
  36) 4608          |          16) 8192
  ———  100          |          ———   19
Facit 128 Acr. 288  |  Facit 512 Acr.  32
       ———          |                  ———
         0          |                   0
                                        1
```

I doubt not, but that by the Operation before going, this *Rule* is ſufficiently illuſtrated; but for the Learner's further Experience herein, I ſhall propound ſeveral other Examples, and only give their Anſwers, leaving the Operation to the Induſtrious Learner.

Example 1. *I demand the Intereſt of* 75 l. *for* 18 *Months, after the Rate of* 6 per Cent. per Annum.

This Queſtion may be more intelligibly ſtated thus, *viz. If* 100 l. *in* 12 *Months gain* 6 l. *Intereſt, What will* 75 l. *gain in* 18 *Months at that Rate? Facit* 6 l. 15 s.

Example 2. *If* 12 *Men can reap* 48 *Acres of Wheat in* 18 *Days, I demand how many Acres* 36 *Men may reap in* 24 *Days? Facit* 192 Acres.

Example. 3. *If* 3 *Quarters of Malt is ſufficient for a Family of* 6 *Perſons for* 2 *Months, How many Quarters is enough for a Family of* 18 *Perſons for* 12 *Months? Facit* 54 Quarters.

Example 4. *If* 8 *Reapers have* 3 l. 4 s. *for* 4 *Days Work, I demand how much* 24 *Men will have for* 16 *Days Work? Facit* 38 l. 8 s.

Example 5. *If* 336 ℔. *of Bread is ſufficient for* 56 *Men for* 12 *Days, I demand how much will ſerve* 460 *Men* 96 *Days? Facit* 22080 ℔ *of* Bread.

Example 6. *If* 40 *Buſhels of Oats be enough for* 8 *Horſes* 20 *Days, I demand how many Buſhels will ſerve* 48 *Horſes* 12 *Days? Facit* 144 Buſhels.

Example 7. *A Banker took in* 250 l. *to pay Intereſt for the ſame, and at the End of* 18 *Months he paid* 272 l. 2 s. *for Principal and Intereſt, I demand at what Rate* per Cent. per Annum, *he paid Intereſt.* Anſwer 5 l. 17 s. 10 $\frac{1}{4}$. per Cent. per Anuum.

CHAP.

CHAP. X.

The Double Rule of Three Inverſe.

I. WHen a Queſtion in the Double *Rule* of Three being ſolved at Two Single *Rules*, as is taught in the foregoing Chapter, hath one of thoſe Single *Rules* Inverſe, (for they are never both Inverſe) then is that Queſtion ſaid to be of the Double *Rule* of Three Inverſe.

II. A Queſtion in the Double *Rule* of Three Inverſe, may be ſtated two ſeveral Ways, as a Queſtion in the Double *Rule* Direct, and ſo the Inverted Proportion may be either in the firſt or ſecond Operation at Pleaſure.

Example 1. *If a Footman travel* 240 *Miles in* 8 *days, when the day is* 10 *Hours long, I demand in how many days he may travel* 720 *Miles, when the Day is* 15 *Hours long?*

The given Numbers being ranked according to the Fifth *Rule* of the Ninth Chapter, will ſtand as followeth:

Miles *Days* *Miles*
240 —————— 8 —————— 720
Hours 10 ———————————— 15

Or thus,

Hours *Days* *Hours*
10 —————— 8 —————— 15
Miles 240 ———————————— 720 *Miles*

Her

Here, according to the firſt Manner of ranking the given Terms, the Inverted Proportion is in the ſecond ſingle Operation.

III. You may alſo work the Double *Rule* of Three, either Direct or Inverſe at one Operation, by the Compound Rule of Five Numbdrs, obſerving to rank the ſeveral Terms as is before taught in the Fifth *Rule* of the Ninth Chapter.

IV. And if your Queſtion be of the Double *Rule* of Three Direct, multiply the Three laſt Terms together for the Dividend, and the two Firſt for Diviſor, as in the following Examples, *viz.*

If 100 l. *in* 12 *Months reqnire* 6 l. *Intereſt, How much Intereſt will* 50 l. *require in* 10 *Months?*

l. *mo.* *l.* *l.*

100 —— ——12————6 50

10 *mo.*

100

12

500

6

Fac. 2 *l.* 10 *s.* 12|00

30|00

2|10

V. But if your Queſtion be of the *Rule* of Three Inverſe, multiply the firſt, ſecond, and laſt Numbers together for Dividend, and the Third and Fourth for Diviſor, as in the following Example.

Example. *If* 50 l. *in* 10 *Months require* 2 l. 10 s. *Intereſt, Of what Principal ſhall the Intereſt of* 6 l. *make in* 12 *Months?*

1ſt. *2d.* *3d.* *4th.* *5th.*
l. *mo.* *l.* *s.* *mo.* *l.*
If 50——10——2——10——12——6

50
10
———
500
6
———
300|0

l. *s.*
2——10
12
———
3|0)

Facit 100 *l.*

Facit ——100——

This laſt being a Queſtion in the *Rule* of Three Inverſe, according to the Directions given in the Fifth *Rule* of this Chapter. I multiply the firſt, ſecond, and fifth Numbers together for a Dividend, which produces 3000. Then I multiply 2 l. 10 s. my third Number, by 12, my fourth Number; and ſay 12 times 10 s. is 120, I put down a (0) and carry 6 l. to the Place of Pounds, and ſay, 12 times 2 is 24, and 6 l carried, is 30 for my Diviſor. Then I divide, and the Quotient is 100 l. being the Principal that is 6 l. Intereſt will require to raiſe it i 12 Months, which was to be proved.

But a more particular Application ſhall be made of the Double *Rule* of Three, when we come t treat of Simple Intereſt.]

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CHAP. XI.

Of EXCHANGE.

HAving explained the Nature of the *Rule* of Three, and the manner of reſolving Queſtions therein, I am naturally led to treat of its particular Uſe in the Exchange of Coins.

In the Exchange of Coins, it is neceſſary that the Par or Value of the Money in each Place be exactly known: For the Word *Par* ſignifies to equalize the Money of Exchange from one Place with that of nother Place. As when I take up ſo much Money *per* Exchange in one Place, to pay the juſt Value thereof n another Kind of Money, in another Place, without aving Reſpect to the Price Current of Exchange or the ſame, but only to what the Money does urrently paſs for in each Place. From whence may e eaſily found out the Profit and Loſs of all Monies rawn, or remitted by Exchange. But this *Par* being rounded principally upon the Current Value of Coin, he Plenty and Scarcity thereof, the Riſing and Fall ng, Inhancement and Debaſing of the ſame, it muſt eceſſarily follow, that the Value of Coin is ſubject nto Change. An Example whereof you have in *rance*, where their Coin has been Changed, In anced and Lowered for ſeveral Times in a few Years; and in the Year 1720, the *French* Crown which was 60 Sous or 3 Livres, is now raiſed to 5 Sous, or 3 Livres 15 Sous.

he Denomination in which England, *and the following Places exchange each with other, are, viz.*

The Exchange of Monies from *London* to *Antwerp*, *mſterdam*, *Hamburgh*, *Liſle*, *Middleburgh*, and other arts of *Flanders*, and *Holland* is valued on the ound Sterling of 20 Shillings: That is, to pay after the Rate of ſo many Shillings, and Pence *Flemiſh* for every Pound Sthrling.

The Exchange from *London* to *Paris*, *Roan*, and moſt Parts of *France*, is valued on the *French* Crown at 54 *d.* that is, to pay ſo many Pence, or ſo many Shillings and Pence Sterling, for the *French* Crown.

The Exchange from *London* to *Venice* is made on the Ducat at 52 *d.* Sterling, to pay ſo many Pence and Parts of a Penny Sterling for every Ducat.

The Exchange from *London* to *Leghorn*, *Genoa*, *Cales*, *Madrid*, and other Parts of *Spain*, is made on the Dollar or Piece of Eight, at 54 *d.* Sterling, tha is to pay ſo many Pence or Parts of a Penny Sterlin for every Dollar.

The Par at *Antwerp*, *Amſterdam*, *Hamburgh*, *Liſle*, *Middleburgh*, and other Parts of *Flanders*, with our Pound Sterling, is Thirty three Shillings fou Pence *Flemiſh*, for a Pound Sterling, which thirt three Shillings four Pence, do make 10 Guilders a two Shillings Sterling the Guilder, or 10 Livres *Tournois*.

The Par at *Paris*, *Roan*, and other Parts of *Franc* has been reckoned ſome times at 71 Sous the Crow of 3 Livres Tournois, generally at 60 Sous th Crown of 3 Livres, every Livre valued at 1 Shillin 6 Pence Sterling, the Crown valued 4 *s.* 6 *d.* Sterling

The Par at *Leghorn*, *Madrid*, *Cales Genoa*, is a 54 Pence Sterling for the Dollar or Piece of Eight.

The Par at *Venice* with our Sterling Money is at Livres 4 Sous of *Venice per* Ducat, or 51 Pence Sterling, ſometimes 52 Pence.

The *Hamburgh* Par is ſometimes reckoned at fou Rix-Dollars and a half, which makes 32 Shilling *Flemiſh* for 20 Shillings Sterling.

The Par at *Lisbon* at 6 *s.* 8 *d.* ½ Sterling on th Milrea or 1000 Reas.

The Par at *Oporto* is the ſame as that at *Lisbon*.

Th

The Value of the most usual Coins with which England *does chiefly Exchange, are, viz.*

		Sterling Money. *s.*	*d.*
Holland & Flanders.	1 Stiver is	0	1 1/5
	6 Stivers of 1 Shilling Flemish is	0	7 1/5
	20 Stivers is 1 Guilder or	2	0
	6 Guilders a Pound Flem. 20 *s.* is	12	0
	33 Shillings 4 *d.* Flemish is	20	0
	1 *Zeland* common Dollar is	3	0
	1 Ducatoon	5	6
	1 Specie Dollar	5	0

		s.	*d.*	*q.*
France.	12 Deniers, or 1 Soulz is	0	0	3 3/5
	20 Soulz, or 1 Livre is	1	6	
	3 Livres or 1 *French* Crown	4	6	

		Sterling Money. *s.*	*d.*
Spanish Money.	13 77/100 Malvadees	0	0 1/4
	372 Malvadees, or 1 Royal	0	6 3/4
	7 20/27 Royals is 1 Ducat	4	4
	8 Royal or piece of Eight	4	6
	1 Royal Copper	0	3 5/8
	17 1/5 Ditto Copper is 1 piece of 8 or	4	6

		Sterling Money. *s.*	*d.*
Portug.	12 1/2 Reas of *Portugal*	0	1
	1 Mil Rea. or 1000 Reas	6	8 1/2
	1 Testoon is	1	3

Sterling Money.

		s.	d.
Italy.	1 Livre at *Leghorn* is	0	9
	1 Crown Current at *Florence* is	5	3
	1 Ducat du Banco at *Venice*	4	4
	1 St. *Mark*	2	10
	1 Palermo Florin is	2	6
Germany.	1 Rix-Dollar of the Empire	4	5¾
	4 ½ Rix-Dollars make 32 Flem. at *Hamburg*, &c.	20	0
	1 Guilder of *Noremburg* is	7	1

A Merchant in London *remits to* Rotterdam 375 l. 10 s. *Sterling, at* 34 s. 8 d. Flemiſh *for* 20 *Shillings Sterling, How many Guilders* Flemiſh *muſt be paid at* Rotterdam, *and what is gained* per *Exchange?*

s. —— s. d. —— l. s. d.

20 —— 34 - 8 *Flem.* what 375 - 10 - 0

12 —— 20

416 —— 7510

416

45060

7510

30040

Guilder - Stivers 2|0) 312416|0

Facit 3905 - 4 —— 2) 156208

2|0 7810|4

3905

To find the Gain or Loſs in one Pound, ſubtract 33 s. 4 d. out of 34 s. 8 d. the Courſe of Exchange, the Difference is 1 s. 4 d. *Flemiſh* per Pound, and ſo much Gain is the Courſe of Exchange in our Favour.

If the Courſe of the Exchange be under Par, it muſt by parity of Reaſon become a Loſs to us, and then the Courſe of Exchange is to our Prejudice.

The like is to be obſerved for the Coins Exchanged in all other Countries.

I will give but one Example of Loſs by Exchange, by which, with the foregoing Example of Gain, the Ingenious may with Eaſe, travel through the general Courſe of Exchange with all Countries.

A Merchant in *London* remits a Bill of Exchange to *Amſterdam* for 297 l. 15 s. Sterling, at 31 s. 3 d. *Flemiſh* for 20 s. Sterling, I demand how much *Flemiſh* Money was paid for the ſaid Bill in *Amſterdam*, and what is loſt *per* Pound by the Exchange.

s.	s.	d.		l.	s.	
20	31 -	3	*Flem.*	297 -	13	*Sterling.*

Guild. *Shill.*
Anſwer 2791 - 8 paid, and
2 s. 1 d. *Flem.* *per* Pound loſt by
the Exchange.

CHAP. XII.

Rules of PRACTICE.

The even Parts

Of a Pound.			*Of a Shill.*		*Of a Hund.*	
s.	*d.*	*l.*	*d.*	*s.*	℔.	*C.*
10	0 is	$\frac{1}{2}$	6 is	$\frac{1}{2}$	56	$\frac{1}{2}$
6	8	$\frac{1}{3}$	4	$\frac{1}{3}$	84	$\frac{3}{4}$
5	0	$\frac{1}{4}$	3	$\frac{1}{4}$	28	$\frac{1}{4}$
4	0	$\frac{1}{5}$	$1\frac{1}{2}$	$\frac{1}{8}$	14	$\frac{1}{8}$
3	4	$\frac{1}{6}$	1	$\frac{1}{12}$	16	$\frac{1}{7}$
2	6	$\frac{1}{8}$			8	$\frac{1}{14}$
2	0	$\frac{1}{10}$			7	$\frac{1}{16}$
1	8	$\frac{1}{12}$				

I. *When the given Price is Pence, take your Parts in Shillings*, the Product divided by 20, gives the Anſwer in Pounds.

Or, You may bring it into Pounds, at once, by cutting off the laſt Figure, and by conſidering that 240 Pence is one Pound, whereof 8 *d.* is $\frac{1}{30}$ 6 *d.* is $\frac{1}{40}$, 4 *d.* $\frac{1}{60}$, 3 *d.* is $\frac{1}{80}$, 2 *d.* is $\frac{1}{120}$.

Example.

254 ℔. of Tobacco at 1 *d.*

1 $\frac{1}{12}$ | 2|1 : *d.*

l. 1 - 1 - 2 *facit.*

254 ℔ at 2 *d.*

d.

42 - 4

2 *l.* 2 - 2 - 4 *facit.*

716 Ells at 3 *d.*

d. *s.* *d.*

$3\frac{6}{810}$ *l.* 8 - 19 - 0 *facit.*

215 ℔ at 4 *d.*

d. *s.* *d.*

$4\frac{1}{60}$ *l.* 3 - 11 - 8 *facit.*

643 Gal. at 6 *d.*

d

$6\frac{1}{40}$ *l.* 16 - 1 - 6 *facit.*

The Three laſt Examples are brought into Pounds at one Operation, after which manner any Sum in Practice may be readily caſt up.

Here you may ſee that 254 ℔. of Tobacco at 1 *d.* a Pound, divided by the $\frac{1}{12}$, gives 21 *s.* 2 *d.* and that divided by 20 (by cutting off the laſt Figures, and taking $\frac{1}{2}$ of it) gives 1 *l.* 1 *s.* 2 *d.* the Price of 254 ℔. of Tobacco; and for 2 *d.* a ℔, take the $\frac{1}{6}$; becauſe 2 *d.* is the $\frac{1}{6}$ Part of a Shilling, and for 3 *d.* a ℔. take $\frac{1}{4}$; and ſo for the others at 4 *d.* and 6 *d.*

II. *When the given Price are ſuch Pence as are no even Part of a Shilling*, take firſt the greateſt even Part of a Shilling, and then part of that Part; add them together, and divide the Product by 20, or cut off the laſt Figure, and take $\frac{1}{2}$.

d.		2121 Ells at 5 *d.*
4	$\frac{1}{2}$	707
1	$\frac{1}{4}$	176 - 9 *d.*
5		86|3 - 9
		44 - 3 - 9 *facit.*

748 ℔ at 7 *d.*

6 *d.* is $\frac{1}{2}$ or 374

of which 1 or $\frac{1}{6}$ is 62 - 4

436

l. 21 - 16 - 4

254 ℔. of Tobacco at 9 *d.* and 10 $\frac{3}{4}$ a ℔.

d.		
6	$\frac{1}{2}$	127
3	$\frac{1}{2}$	63 - 6
9	$\frac{1}{4}$	19|0 - 6
		9 - 10 - 6 *fa.*

d.		254 at 10 *d.* $\frac{3}{4}$
6	$\frac{1}{2}$	127 ſhill. in 254 ſixpences.
4	$\frac{1}{3}$	84—8 in 254 groats.
$\frac{1}{2}$	$\frac{1}{8}$	10—7 in 254 half pence.
$\frac{1}{4}$	$\frac{1}{2}$	5—3 $\frac{1}{2}$ in 254 farthings.
		22 7 - 6 $\frac{1}{2}$
		11|7 - 6 $\frac{1}{2}$ *facit.*

Demonſtration. In 254 ℔. of Tobacco at 10 *d.* $\frac{3}{4}$ a ℔. there muſt be 254 Sixpences, which is 127 Shillings, and 254 Groats, which is 84 *s.* 8 *d.* and 254 Half-pence, which is 10 *s.* 7 *d.* and 254 Farthings, which is 5 *s.* 3 *d.* $\frac{1}{2}$; all theſe added together, make 227 *s.* 6 *d.* $\frac{1}{2}$, which divided by 20, gives the *facit* 11 *l.* 7 *s.* 6 *d.* $\frac{1}{2}$.

		614 ℔. at 11 *d.*
6	$\frac{1}{2}$	307
4	$\frac{1}{3}$	204 - 8 *d.*
1	$\frac{1}{4}$	51 - 2
11		56|2 - 10
		28|2 - 10 *facit.*

		563 ℔. at 11 *d.* $\frac{1}{2}$.
6	$\frac{1}{2}$	281 - 6 *d.*
4	$\frac{1}{3}$	187 - 8
1 $\frac{1}{2}$	$\frac{1}{4}$	70 - 4 $\frac{1}{2}$
		53|9 - 6 $\frac{1}{2}$
		26 - 19 - 6 $\frac{1}{2}$ *facit.*

III. *If the given Price be any Number of Pence above* 1 *s. and leſs than* 2 *s.* take the Aliquot Parts in Pence, (as in the laſt Precedent) to which add the given Quantity for the 1 *s.*, and proceed as before.

Example.

254 ℔. at 15 *d.*
d $\frac{1}{4}$ 63 - 6
31|7 - 6
15 - 17 - 6 *facit.*

254 at 17 *d.*
$\frac{1}{3}$ 84 - 8
$\frac{1}{4}$ 21 - 2
35|9 - 10
17 - 19 - 10 *facit.*

---

264 *yds.* at 18 *d.*
$\frac{1}{2}$ 132
39|6
19 - 16 - 0 *facit.*

295 *gall.* at 19 *d.*
$\frac{1}{2}$ 147 - 6
$\frac{1}{6}$ 24 - 11
46|7 *s.* - 5 *d.*
23 - 7 - 5 *facit.*

---

672 ℔. at 22 *d.* $\frac{3}{4}$
$\frac{1}{2}$ 336
$\frac{1}{3}$ 224
$\frac{1}{8}$ 42
1274
63 - 14 - 0 *facit.*

456 *Ells* at 23 *d.* $\frac{1}{4}$
$\frac{1}{2}$ 228
$\frac{1}{3}$ 152
$\frac{1}{4}$ 38
$\frac{1}{4}$ 9 - 6
88|3
l. 44 - 3 - 6 *facit.*

In 672 ℔. at 22 *d.* $\frac{3}{4}$ a ℔. I take $\frac{1}{2}$ for 6 *d.* the $\frac{1}{3}$ for 4 *d.* and the $\frac{1}{8}$ for the $\frac{3}{4}$, becauſe $\frac{3}{4}$ is the $\frac{1}{8}$ of 6 *d.* by which you will find that in 672 Sixpences there is 336 Shillings, and in 672 Groats there is 224 Shillings, and in 672 Three Farthings there is 42 Shillings.

IV. *If the given Price be ſuch Shillings as are an even Part of a Pound* Sterling, take ſuch a Part of the given Quantity, and the Quotient is Pounds.

	Ells. *s.* *d.*		*Yrds.*
	433 at 1 - 8		271 at 2 *s.*
$\frac{1}{12}$	*l.* 36 - 1 - 8 *facit.*	$\frac{1}{16}$	27 - 2 - 0 *facit.*
	674 at 2 *s.* 6 *d.*		495 at 3 *s.* 4 *d.*
$\frac{1}{8}$	84 - 5 - 0 *facit.*	$\frac{1}{8}$	82 - 10 - 0 *facit.*

	Crowns.		*Dollars.*
	457 at 5 *s.*		612 at 4 *s.*
$\frac{1}{4}$	114 - 5 - 0 *facit.*	$\frac{1}{5}$	122 - 8 - 0 *facit.*
	395 at 6 *s.* 8 *d.*		372 at 10 *s.*
$\frac{1}{8}$	98 - 6 - 8 *facit.*	$\frac{1}{2}$	186 - 0 - 0 *facit.*

In this firſt Example of 433 Ells, at 1 *s.* 8 *d.* I take the $\frac{1}{12}$, becauſe 1 *s.* 8 *d.* is the $\frac{1}{12}$ of a *l.* and ſay, 12 in 43 is 3 times, reſt 7, which makes the 3 to be 73; then 12 in 73, is 6 times, reſt one, which is 1 *s.* 8 *d.* which I put down as above.

V. *If the given Price be ſuch Shillings and Pence as are no even Parts of a Pound,* multiply the given Quantity by the Number of Shillings, and take the Aliquot Parts of Pence, and proceed according to the Second Rule of this Chapter.

Ells.
375 at 8 *s.* 6 *d.*
8
3000
½ 187 - 6
318|7 - 6
159 - 7 - 6 *facit.*

Ells.
493 at 15 *s.* 10 *d.*
15
2465
493
½ 246 - 6 *d.*
⅓ 164 - 4 *d.*
780|5 - 10
390 - 5 - 10 *facit.*

C. *s.* *d*
295 at 12 - 9
12
½ 3540
147 - 6
73 - 9
376|1 - 3
188 - 1 - 3 *facit.*

C. *s.* *d.*
214 at 7 - 11
7
1498
½ 107
½ 53 - 6
⅓ 35 - 8
169|4 : 2
84 - 14 - 2 *facit.*

IV.

VI. *If your given Price be any Number of Pounds, Shillings and Pence;* reduce first your Pounds and Shillings into Shillings, and proceed according to the last Rule.

Pieces *l.* *s.* *d.*
754 at 4—03—7
83 20
2262 83
6032
1/2 377
1/6 62 -- 10
6302|1 -- 10
3151 - 1 - 10 *facit.*

Tun. *l.* *s.* *d.*
176 at 3—7—10
67 20
1232 67
1056
11792
1/2 88
1/3 58 - 8
1193|8 - 8
596 - 18 - 8 *facit.*

VII. *If your given Price be any Number of Pounds, and exceeding five Pounds,* then multiply your given Quantity by the Number of the Pounds, and take your Aliquot part in Shillings and Pence, *viz.*

C. *l.* *s.* *d.*
74 at 11—12—6
11
s. 814
10 1/2 37 *d.*
2 1/2 1/4 9 - 5 - 0
l 860 - 5 - 0 *facit.*

hheads. *l.* *s.* *d.*
394 at 16 — 16 — 3
16
2364 } at 16 *l.*
394 }
197 at 10 *s.*
1/2 98 - 10 at 5
1/4 19 - 14 at 1
1/3 4 - 18 - 6 at 0 - 3*d.*
l. 6624 - 2 - 6 *facit.*

VIII. *If the given Quantity be any number of* C. *qrs. or* ℔. or Tun C. qrs. *and* ℔. *&c.* work as before where no Part is, and take your Aliquot Parts in Quarters and Pounds, or in *C. qrs.* and ℔. and add them to your firſt Work. An Example or two will make this plain.

```
    C.          s.    d.
    75 ½ at 22 - 6
    22
                 11 - 3
   ------
    150
   150
     37 - 6
     11 - 3
   ----------------
   169|8 - 9
    84 - 18 - 9 facit.
```

```
        C.          s.    d.
        63 ¾ at 12 - 10
        12 - Mult.
       ---------------
        756 - s.
  ½      31 - 6 d.
  ⅓      21
          9 - 7 ½ C.
       ---------------
        81|8 - 1  Sum
       ---------------
  l.    40 - 18 - 1 ½ fac.
```

In the Example of 63 *C.* ¾ at 12 *s.* 10 *d.* the *C.* Weight, I multiply the *C.* by 12 *s.* and take the Parts in Pence for the odd Pence; then for the ¾ of *C.* I firſt take the ½ of the Price of a *C.* and that makes 6 *s.* 5 *d.* the Price of ½ a *C.* and then I take the ½ of that, which gives 3 *s.* 2 *d.* ½, the Price of a *qr.* of a *C.* Add them together, it gives the Price of ¾ of a *C.* which is 9 *s.* 7 *d.* ½. and muſt be added to your firſt Work. Two or Three Examples more will make it familiar and eaſie to any Capacity.

84 C. 3 *qrs.* 11 ℔. at —— 21 *s.* 10 *d.*

21

84

168

$\frac{1}{2}$ 42

$\frac{1}{3}$ 28

18 - 6

185|2 - 2 - 6

92 - 12 - 6 *facit.*

$\frac{1}{2}$ 10 - 11

℔ $\frac{1}{4}$ 5 - 5 $\frac{1}{2}$

7 $\frac{1}{4}$ 1 - 4 $\frac{1}{4}$

4 $\frac{1}{7}$ 0 - 9 $\frac{1}{4}$

18 - 6

The Pricce of 3 *qrs.* 11 ℔.

Tun. *C.* *qr.* ℔. *l.* *s.* *d.*

12 - 14 - 3 - 14 at 15 - 17 - 06 a Tun.

12

190 - 10 - 00

$\frac{1}{2}$ 7 - 18 - 9

$\frac{1}{5}$ 3 - 3 - 6

$\frac{1}{8}$ 0 - 7 - 11$\frac{1}{4}$

$\frac{1}{2}$ 0 - 3 - 11$\frac{1}{2}$

$\frac{1}{2}$ 0 - 1 - 11$\frac{3}{4}$

Facit 202 - 06 - 1$\frac{1}{2}$

CHAP.

CHAP. XIII.

The Order of Deducting Tare *and* Tret.

GRoſs is the Weight of a Commodity, with the *Hogſheads*, *Cheſts*, *Box*, or whatever elſe contains it.

Tare is the Allowance given for the Weight of the Cask, Hogſhead, *&c.*

Tret is an Allowance of 4 ℔. in 104 ℔. for Waſte and Duſt on ſome ſort of Goods.

C. qr. ℔. ℔. ℔.
Exam. 11 *hhds.* qt. 45—3—15 *Groſs*, *Tare* 14 *per* 112
14 - $\frac{1}{8}$ ——————— *how many* ℔. *Neat?*
5—2—26 *Tare.*
———————
Facit 40—0—17

I. Here 14 ℔. Tare being $\frac{1}{8}$ of 112 ℔. take $\frac{1}{8}$ of the Groſs, the Quotient gives the whole Tare, which ſubtract from the Groſs, gives the Neat Weight.

The Operation is performed thus: Divide the Groſs by 8, ſay 4 in 45, 5 times, and 5 *C.* remains, which is 20 *qrs.* and 3 is 23; then 8 in 23, 2 times 7 *qrs.* remains, which turned into Pounds by 28, and added to the 15 ℔. makes 211 ℔. then 8 in 211 is 26 times. So the Tare is 5 *C.* 2 *qr.* 26 ℔.

Example.

C. qr. ℔. s. d.
Example. 40 - 0 - 17 *Neat* at 22 - 6
22 ℔.
14 $\frac{1}{8}$ 2 - 9 - $\frac{3}{4}$
80 2 $\frac{1}{7}$ 0 - 4 - $\frac{3}{4}$
80 1 $\frac{1}{2}$ 0 - 2 - $\frac{1}{4}$
20
0 - 3 - 4 $\frac{3}{4}$ *facit* 3 - 2 - $\frac{1}{4}$
Price of 17 ℔.
90| 3 - 4 $\frac{3}{4}$
l. 45 - 3 - 4 $\frac{3}{4}$

If the Tare be 16 ℔. in 112 ℔. take $\frac{1}{7}$ of the Groſs, and work as before.

If 18 ℔. *per* 112 ℔. for *Tare*, take the Aliquot Parts, *viz.*

For 6 ℔. take the $\frac{1}{7}$ } Add the Tare of 16, and
For 2 take the $\frac{1}{8}$ } the Tare of 2 together, the
Total ſubtract from the Groſs, and work as before.

℔. ℔. { ℔.
If 20 in 112 for Tare { for 16 take $\frac{1}{7}$ ℔.
{ for 4 take $\frac{1}{4}$ of 16

II. When an Allowance is made for Tret, then (after the Tare is ſubtracted from the Groſs) the Remainder is called Suttle, which divided by 26 becauſe 4 ℔ is the 26th part of 104 (the Allowance always given for Tret) the Quotient gives the Tret, which ſubtracted from the Suttle, gives the Neat Weight.

Example

C. qr. ℔. ℔. ℔. ℔. ℔.
Ex. 45 - 3 - 15 Gr. Tare 16 in 112 Tret 4 in 104
16$\frac{1}{7}$ 6 - 2 - 6 Tare.

39 - 1 - 9 *Suttle*. 4) 104
4 26

157
28

1265
314

4405 Pounds Subtle. 26) 4405
169 Tret. 180
169 245

4236 Neat Pound at 6 *d*. 11

6$\frac{1}{2}$ 211|8 s.

l. 105 - 18 - 0 *facit*.

III. If the Allowance for Tare be 8 ℔. 10 ℔. 12 ℔. in 112, or any other leſſer Number, whether an Aliquot Part of 112 or not; in ſuch Caſes, divide the Groſs into two Parts by 2, which will make it half Hundreds, then ſay, 8 is $\frac{1}{7}$ of $\frac{1}{2}$ C. or if 12 ℔. in 112 ℔.

Rule. From $\frac{1}{8}$ of the Groſs, take $\frac{1}{7}$ of that 8th for Tare at 12 *per Cent*. When you have found Tare, ſubtract it always out of the whole Groſs.

I might enumerate Examples, but theſe being ſufficient to inſtruct any ordinary Capacity in Tare and Tret.

I ſhall proceed to ſhew ſome other abbreviated Ways of caſting up Goods and Merchandize.

CHAP.

CHAP. XIV.

For Retailers *of ſmall* Parcels, *as Mercers, Linnen and Woollen Drapers, Haberdaſhers of Hats*, &c.

THE moſt abbreviate and ready Way, is to multiply the Price by the Quantity.

s. d.
Example. Sold 7 Yards of Cloath, at 14 : 6 a yard.
7

Facit l. 5 - 1 - 6

Say 7 times 6 is 42, which is 3 *s.* 6 *d.* ſet down 6 *d.* and carry 3 *s.* to the Place of Shillings, and ſay, 7 times 4 is 28, and 3 I carry is 31, ſet down 1 *s.* and carry 3 Angels to the Place of Tens of Shillings, and ſay, 7 times 1 is 7, and 3 I carry is 10 Angels, which is 5 *l.* fix the 5 *l.* in the Place of Pounds: So the Price of 7 Yards is 5 *l.* 1 *s.* 6 *d.*

s. d.
Example 2. Sold 11 Yards and ½ at 13 - 3.
11

l. 7 - 5 - 09
the ½ Yard 6 - 07 ½

Facit l. 7 - 12 - 04 ½

For half a Yard, take half of 13 *s.* 3 *d.* and add to the Product of 11 Yards.

Example

l. *ſ.* *d.*
Example 3. Sold 14 Yards and $\frac{5}{8}$ at 1 - 07 - 10
7

9 - 14 - 10
2

19 - 09 - 08

$\frac{1}{8}$ is 0 - 03 - 05 $\frac{3}{4}$
$\frac{4}{8}$ — 0 - 13 - 11

Facit l. 20 - 07 - 00 $\frac{3}{4}$

Find firſt the Price of 7 Yards, *fac.* 9 *l.* 14 *ſ.* 10 *d.* which multiplied by 2, gives 19 *l.* 9 *ſ.* 8 *d.* the Price of 14 Yards; then take the Aliquot Parts of $\frac{5}{8}$ for the Price of one Yard, as you ſee in the Operation: The *facit* is 20 *l.* 7 *s.* 0 *d.* $\frac{3}{4}$.

l. *ſ.* *d.*
Example 4. Sold 7 C. $\frac{1}{2}$ of Currans at 2 - 13 - 6
7

18 - 14 - 6
1 - 06 - 9

Facit 20 - 01 - 3

Object. There are many Numbers under 100 that are not included in the Multiplication Table, or being multiplied together, will not produce the given Quantity; and ſo conſequently cannot be done by this new Way of Practice.

Anſw. It's very true, there are ſeveral Numbers under 100 that no two Numbers multiplied together can produce them, ſuch as 13, 17, 19, 26, 29, 31, 33, 37, and many more.

Rule. In ſuch Caſes multiply by two ſuch Numbers, as being multiplied together, will come neareſt to ſuch odd Numbers; then multiply the Price by that part which wants to make up the given Quantity. An Example of which follows.

		s.	d.
5 *Exam.* 29 *Ells*, at		7 -	9
			7
	2—	14 -	3
			4
	10 -	17 -	0
		7 -	9
Facit	11 -	04 -	9

Here I multiply by 7 and 4, becauſe 7 times 4 is 28, and for the odd Ell to make it 29, I add the Price of the Ell to the Product.

Facit 11 *l.* 4 *s.* 9 *d.*

Example 6. If 34 Ells at the ſame Price multiplied by 8 and 4, makes 32, and multiply the Price of one Ell by 2, and add that to the Product, makes 34.

7. *Example*

C. q. l. l. s. d.
7. *Example* 15 - 3 - 7 at 4 - 16 - 6 *per Cent.*
5

l. 24 - 2 - 6
3

15 is = *l.* 72 - 7 - 6
1 *qr.* 1 - 4 - 1 $\frac{1}{2}$
2 2 - 8 - 3
$\frac{1}{4}$ of 1 or ℔. 7 0 - 6 - 0 $\frac{1}{4}$

facit l. 76 - 05 - 10 $\frac{3}{4}$

Goods ſold by 112 ℔. *the C. Weight.* 1. Account 2 *s.* 4 *d.* for every Farthing in the Place of 1 Pound Weight.

Example 1. At 3 $\frac{1}{2}$ the Pound, what 112
14 32 - 8 *d.*

2. Or multiply the Pence that 1 Pound Weight coſt by 7, and divide by 15, the Quotient is the Price in Pounds, of a Hundred Weight.

Example. At 7 *d.* the Pound, what coſt 112.
at 7 *d.*
7
l. *s.* *d.*
15) 49 (3 - 5 - 4
4
or 80 *s.*
5
or 60 *d.*

3. Multiply the Pounds in Money that 112 coſt by 15, and divide the Product by 7, the Quotient gives the Price 1 Pound coſt.

If

l. *s.* *d.*
If 112 coſt 2 - 06 - 8 What coſt——1
5

11 - 13 - 4
3

7) 35 - 00 - 0 *Facit* 5 Pence.

Goods ſold by 100. 4. Multiply the Pence that 1 ℔. by 5, and divide by 12, the Product is the Price in Pounds.

At 15 *d.* the Ounce, What coſt 100 Ounces?
5

12) 75

Facit 6 *l.* - 5 *s.*

5. Multiply the Pounds in Money 100 ℔. weight coſt by 12, and divide by 5, the Quotient gives in Pence the Price of 1 Pound.

l. *s.*
If 100 coſt 6——5 What 1?
12

5) 75 - 00 *d.*
15 - *Facit* 15

Things ſold by 120, *ſuch as Deals*, &c.

6. Multiply the Pence that 1 coſt by 2, and divide by 4, the Quotient is the Price of 120.

What coſt 120 Deals at 13 *d.* the Deal-board?

2—*s.*

4) 26

Facit 6 - 10

7. Or divide the Pence that one is worth by 2, the Quotient will be Pounds.

What coſt 120 Yards of Ribbon at 5 *d.*?

Facit 2 *l.* 10 *s.*

8. For Things ſold by 200, annex only a Cypher to the Sum of the given Price.

What coſt a Bale of Paper, Quantity 200 Reams, at 6 *s.* a Ream? *Facit* 60 *l.*

Wine or Oil ſold by the Tun of 252 Gallons.

9. So many Pounds the Tun coſt, abate ſo many Shillings, and the Gallon will be worth ſo many Pence.

Exa. If 252 Gallons coſt 25 *l.* What coſt 1 Gallon?

1 - 5 *s.* *d.*

23 - 15 *facit* 1 - 11 ¾

Here 20 *s.* is valued at 1 Penny, ſo that 23 *l.* 15 *s.* is but 1 *s.* 11 *d.* ¾, the Price of 1 Gallon of Oil.

10. For Things ſold by 300, annex a Cypher to the Price of one, take half and add them together.

What coſt 300 Chaldron of Coals at 25 *s.*

250
125

375

11. For Things ſold by 500, put a Cypher to the Price, then double it, take half the firſt, and add the two laſt together.

What coſt 500 Quarrtes of Corn, at 31 *s.* a Quarter?

310 *s.*
2

620
155

---

775 Pounds.

12. For Things ſold by 900, put a Cypher and treble it.

What coſt 600 Hats at 9 *s.*
90
3

Facit 270 Pound.

13. For things ſold by 600, put a Cypher, treble it, take half the Firſt, and add the two laſt together.

What coſt 700 Gallons at 11 *s.*

110
3

330
55

Facit 385 Pounds.

There are abundance of other ſhort Ways, which cannot well be compriſed in this little Tract: Theſe already given are ſufficient for any ingenious inventive Head to lay a good Foundation, from whence he may raiſe what Structure he pleaſes.

CHAP. XV.

INTEREST is either *Simple* or *Compound.*

S*Imple Intereſt* is that which ariſeth, or is computed from the Principal only. And here many Queſtions are done by the Double Rule of Three (called the Compound Rule of Five Numbers) or Practice: But ſome are ſolv'd by the Single Rule of Three.

Example. What will the Intereſt of 275 *l.* 11 *s.* 3 *d.* come to for a Year, at 6 *per Cent?*

State your Queſtion by the Rule of Three, and ſay,

```
         l.             l.   s.  d.
If 100 gain 6, what will 275 - 11 - 3
                                    6
                      -----------------
                      l. 16|53 - 07 - 6
                      s. 10|67 - 20
    l.   s.   d.         ------   12
Facit 16 - 10 - 8 - 1/10 d.     8|10
```

Here 275 *l.* 11 *s.* 3 *d.* Principal is multiplied by 6 *l.* (the Intereſt) being the middle Number, and divided by 100 the firſt Number, by cutting off Two Figures in the Dividend, reſt 53 *l.* which multiply by 20, gives 1067 Shillings, (adding the 7 *s.*) which divided again by 100 as before, reſt 67 *s.* which multiplied by 12, and the 6 *d.* added, and divided as before, gives 16 *l.* 10 *s.* 8 *d.* the Intereſt for 1 Year.

l. *s.* *d.*
275 - 11 - 3 for a Year, at 5 *l. per Cent.*
5

13|77 - 16 - 3
—20
15|56
—12
6|75
Facit 13 - 15 : 6 $\frac{75}{100}$.

l. *s.* *d.*
275 - 11 - 3 at 5 $\frac{1}{2}$ *per Cent.*
5

1377 - 16 - 3
137 - 15 - 7 $\frac{1}{2}$

15|15 - 11 - 10 $\frac{1}{2}$
—20
3|11
12
1|42
4 *l.* *s.* *d.*
1|70 *Facit* 15 — 3 — 1 $\frac{1}{4}$ $\frac{70}{100}$.

What comes the Inſurance of 975 *l.* 13 *s.* 4 *d.* to, at 4 Guinea's *per Cent.* each Guinea at 21 *s.* 6 *d.* ?

l. *s.*
l. 975 - 13 - 4 at 4 - 6 *per Cent.*
4

l. 39|02 - 13 - 4 Product.

s. 0 - 53 =

d. 6 - 4

9 - 1 - 6

Or *l.* 39 - 0 - 6 - 1 $\frac{6}{10}$ at 4 *per Cent.*
2 - 8 - 9 - 1 at 5 *s.* = $\frac{1}{16}$ of the laſt.
0 - 9 - 9 - 2 at 1 *s.* = $\frac{1}{5}$ of the laſt.

l. 41 - 19 - 1 - 0 $\frac{6}{10}$ *Facit.*

Decimally. 975.6r1 } Multiply.
4.3

29270
39026r1

Product *l.* 419536 Anſwer.
Or, *l.* 41 - 19 - 1

l. *s.* *d.*
275 - 11 - 3 at 5 *per Cent.* for 14 Months.
l. *s.* *d.*
The Int. of 1 Year is 13 - 15 - 06
2 Month $\frac{1}{6}$———————— 2 - 5 - 11

Facit 16——01——05 Int. for 14 Mon.

l. s. d.
275 - 11 - 3 at 5 *per Cent.* for 3 Years, 5 Months, 20 Days.

The Intereſt of a Year is, which multiplied by the 3 Years, and take Aliquot Parts for 5 Months and 20 Days, as you ſee in the Operation.

			l.	s.	d.
			13	15	06
					3
m.			41	6	6
	4	$\frac{1}{3}$	4	11	10
	1	$\frac{1}{4}$	1	2	11 $\frac{1}{2}$
Days	10	$\frac{1}{3}$	0	7	7 $\frac{3}{4}$
	10		0	7	7 $\frac{3}{4}$
Facit			47	16	07

The Way uſed by Bankers for caſting up Intereſt, is generally by Days: thus,

They bring the Principal Money into Pence, and multiply it by the Days it is out at Intereſt, and divide by 6083 for 6 *per Cent.* and 7300 for 5 *per Cent.* (which are the Days of a Year multiplied by 100, and divided by the Rate of Intereſt) An Operation in the Compound Rule of Five Numbers, *viz.*

If 100 *l.* in 365 Days gain 6 *l.* Intereſt, What will 75 *l.* gain in 70 Days?

Days.
Example. 75 - 11 - 3 Intr. 70 at 6 *per Cent.*
20
1511
12
18135 *d.*
70
d. s. d.
6083) 2169450 (208 (17 - 4 *Anſwer.*
52850 12) 88
4186 4 *d.*

Example. 100 *l.* at Intereſt for 75 Days at 5 *per Cent.*

20

2000
12

24000
75

120000
168000

18000|00

Facit 20 *s.* 6 *d.*

365
100

5) 36500

7300

73|00|18000|00
. . .

340
12) 249, 480

Facit 20 *s.* 6 *d.* 42 or ½ *d.*

CHAP. XVI.

Compound Intereſt *is that which ariſeth from the* Principal, *and alſo from the* Intereſt *thereof, and therefore is called* Intereſt *upon* Intereſt.

THis ſort of Intereſt is counted very unlawful, and is ſeldom or never allowed, but by particular Contracts on Valuation of Money ſometimes on Purchaſes.

The beſt Way of working this ſort of Intereſt is by Decimals.

Example. 275 *l.* 11 *s.* 3 *d.* forborn 5 Years at 6 *per Cent. per Annum,* Intereſt upon Intereſt, What will the ſame amount to?

Reduce the 11 *s.* 3 *d.* into a Decimal Fraction, according to the Third Rule of the Eighteenth Chapter of this Book.

11 *s.* 3 *d.* $\frac{135}{240}$ of a Pound Sterling, *viz.*

Which brought into a Decimal Fraction, is 5625, the Operation of the Queſtion is, *viz.*

Multiply by
If 100 gain 6, What will 275, 5626——6
16, 5337

Beaufor
1 Year——292, 0963——6
17, 5257

2 Year——309, 9221——6
18, 5773

3 Year——328, 1994——6
19, 6919

4 Year——347, 8914——6
20, 8734

5 Year——368, 7649——6

Facit 386 *l.* 15 *s.* 3 *d* $\frac{1}{2}$.

Here the third Number is multiplied by 6, the ſecond Number, and divided by 100 the firſt Number, which is done by ſetting out the two firſt Figures towards the Right-hand, and caſting them away as you multiply them to abbreviate the VVork of Multiplications, which would be very large, were they all ſet down, where 15, or more Years Intereſt is forborn, beſides 4 or 5 Places of Decimals will be correct to a Farthing or little more, ſo that the *Facit* is 368 *l.* 15 *s.* 3 *d.* ½ the Decimal Fraction being valued according to the Sixth Rule of the Eighteenth Chapter of this Book.

CHAP. XVII.

Rebate or Diſcount *is when a Sum of Money due at any time to come, is ſatisfied by the Payment of ſo much preſent Money, as being put forth at a certain* Rate of Intereſt *for the Time being, will be equal to the Sum firſt due.*

IN Rebate, 12 Months is the firſt Number, the Rate of the Intereſt the ſecond, and the Time propoſed the third Number.

Then ſay, If 100 and that *Facit* (added together) abate that *Facit*, what ſhall the given Sum Rebate?

The Quotient or Quotients ſhew the Rebate: which ſubtracted out of the given Sum ſhews the Money to be paid preſently.

Example 1. What will the Rebate of 795 l. 11 s. 2 d. come to for 11 Months, at 6 l. *per Cent.*?

If 12 Months give 6 l. What will 11 Months? *Facit* 5 l. 10 s. Then

If 105 l. 10 s. Rebate 5 l. 10 s. What will 795 l. 11 s. 2 d? *Facit* 41 l. 9 s. 5 d.

Example 2. The Rebate of 795 l. 11 s. 2 d. comes to for 17 Months at 6 *per Cent.*

If 12 Months give 6 l. What will 17 Months? *Facit* 8 l. 10 s.

If 108 l. 10 s. Rebate 8 l. 10 s. What will 795 l. 11 s, 2 d.? *Facit* 62 l. 6 s. 6 d.

Example 3. Sold Goods for 795 l. 11 s. 2 d. to be paid at two, 3 Months, that is, (half at 3 Months, and the other half at 3 Months after that) If all the Money be paid preſently, what muſt be diſcounted?

Firſt, Divide the given Sum into Two Parts, according to the Time of Payment, as you ſee here; then ſay,

l. s. d.
397 - 15 - 7

If 12 Months give 6 l. what will 3 Months? *Facit* 1 *l.* 10 s. 2 d.

If 101 *l.* 10 s. abate 1 l. 10 s. What will 397 l. 15 s. 7 d.? *Facit* 5 l. 17 s. 6 d. $\frac{3}{4}$.

If 12 Months give 6 l. What will 6 Months give? *Facit* 3 l.

If 103 l. abate 3 l. VVhat will 397 l. 15 s. 7 d.? *Facit* 11 l. 11 s. 8 d. $\frac{1}{2}$.

Add the Sum of the Rebates together, and ſubtract it out of the given Sum, gives the Money to be paid preſently.

l.	s.	d.				
				795	11	2
397	15	7	for 3 Month	5	17	6 $\frac{3}{4}$
397	15	7	for 6 Months	11	11	8 $\frac{1}{2}$
			All the Rebate	17	09	3 $\frac{1}{4}$
			The Money to be paid preſently	778	01	10 $\frac{3}{4}$

Example 4. Sold Goods for 795 l. 11 s. 2 d. to be paid at 3, 2 Months, if all the Money be paid preſently, what muſt be diſcounted?

Divide the given Sum into Three Parts, and work as before. *Facit* 15 l. 10 s. 10 d. ½.

Example 5. Sold Goods for 795 l. 11 s. 2 d. to be paid at 4, 1 Month, if all the Money be paid down, what muſt be diſcounted at 6 *per Cent.*? *Facit* 9 l. 15 s. 11 d.

Divide your Money into Four Payments, then work as before, *viz.*

12 *mo.* — 6 l. — 1 *mo.* —— *Facit* 10 *s.*
100 l. 10 s. abate 10 s, what will 198 l. 17 s. 9 d.
Facit 19 s. 9 d.

12 *mo.* — 6 l. — 2 *mo.* —— *Facit* 1 l.
101 l. —1, l.—198 l. 17 s. 9 d. *Facit* 1 l. 19 s. 4 d.

12 l. *mo.*—6 l. — 3 *mo.* — *Facit* 1 l. 10 s.
101 l. 10 s. abate 1 l. 10 s. what 198 l. 17 s. 9 d.
Facit 2 l. 18 s. 9 d.

12 *mo.* — 6 l. ——— 4 *mo.* —— *Facit* 2 *l.*
102 l. abate 2 l. what will 198 l. 17 s. 9 d.
Facit 3 l. 17 s. and 11 d.

l. s. s.
0 - 19 - 9 ½
1 - 19 - 4 ½
2 - 18 - 9 ¼
3 - 17 - 11 ¼
9 - 15 - 11 Total Rebate.

l s. d.
795 - 11 - 2
Rebated 9 - 15 - 11
Facit 785 - 15 - 3
To be paid down.

CHAP. XVIII.

FRACTIONS

Are of Two Kinds, { *VULGAR* and *DECIMAL.*

A *Vulgar Fraction* is cauſed by Diviſion of whole Numbers, the Remainder of which being leſs than the Diviſor, called the Numerator, is always the Dividend, and the Denominator is the Diviſor.

3 Numerator.
4 Denominator.

Decimal Fraction is ſuch a one, whoſe Denominator is underſtood, and therefore need not be expreſſed: And is an Unit with as many Cyphers ſollowing it, as there be Figures and Cyphers in the Numerator.

Decimal Fractions, whether they ſtand alone, or be joyned with Integers, have always a Comma or Point before them to diſtinguiſh them from Integers; at 5 360042.

In *Decimals* the value of every Figure or Cypher decreaſes by a Tenfold Proportion from the Unit's Place towards the Right-hand, as the whole Numbers do increaſe the Value towards the Left-hand, by the like Proportion, as you may ſee in the following Table.

VVhole Numbers.	Decimals.
6 *C Thou.*	2 *Tenths*
5 *X Thou.*	3 *Hund.*
4 *Thou.*	4 *Thou.*
3 *C.*	5 *X Thou.*
2 *X.*	6 *C Thou.*
1 *Unit.*	

Cyphers before Integers, and at the End, or Right-hand of Decimals are no Value; but after Integers, and before Decimals they have their Value; for in Integers they increaſe, and in Decimals they diminiſh the Value of the other Figures joyned with them.

In Integers 005 is but 5, and 004 is but 4, and 06 is but 6.

But in Decimals, ,005 is $\frac{5}{1000}$, and ,004 is $\frac{4}{1000}$, and ,06 $\frac{6}{100}$.

And again, in Integers 500 is Five hundred, and 400 is Four hundred.

In Decimals 500 is but 5, and 400 is but 4, *&c.*

Next to Abbreviation and Valuation of Vulgar Fractions, there is little required; but to know how to bring a Fraction of a leſſer Name into a Fraction of greater Name; And to reduce Fractions of divers uneqal Denominators to one Common Denominator, which being well underſtood, you may with as much eaſe Add, Subtract, Multiply and Divide a Fraction, as you can a whole Number.

In Decimals a Fraction is ſeldom abbreviated; therefore,

1. *To abbreviate any Vulgar Fractions*, find ſuch a Number for dividing both the Numerator and Denominator thereof, ſo that no Remainder be on either of the Diviſions.

Example. Abbreviate $\frac{96}{120}$ into $\frac{4}{5}$ its loweſt Term.

Say, 12 in 96, 8 times, and 12 in 120, 10, then the Fractions is $\frac{8}{10}$, then ſay, 2 in 8, 4 times, and 2 in 10, 5 times, then the Fraction is $\frac{4}{5}$, ſo that 4 is to 5, as 96 to 120.

2. *To know what Part of a Pound Sterling any Number of Shillings and Pence are*, bring the Shillings and Pence into Pence for a Numerator, and place 240 under it (the Pence of one Pound) for a Denominator.

Example. VVhat part of a *l.* is 11 *s.* 3 *d?*
facit $\frac{135}{240}$

3. *To reduce Vulgar Fractions into Decimals*, Add Cyphers at pleaſure to the Numerator, and divide by the Denominator. *Example*, viz.

Reduce 11 *s.* 3 *d.* into a Decimal Fraction.

```
     12              24|0)  1350000
   ------            -----   150
    135                       60
  --------  Numer. facit 5625 120
    240                      -----
                               0
```

Cr, $\frac{5625}{10000}$ or .5629

Example. Reduce $\frac{4}{5}$ into a Decimal Fraction.

5) 4000

,800

Or rather .8 *facit* ,800

4. *To value a Vulgar Fraction*, Multiply the Integer into the Numerator, and divide by the Denominator.

VVhat is the $\frac{5}{8}$ of a Pound *Sterling*?

20

5

s. d.

8) 100 (12 - 6

4 *facit.*

48 *d.*

s. d.

An Ell worth 7 - 9 what is $\frac{2}{5}$ worth?

2

5) 15 - 6

facit — 3 - 1 $\frac{1}{5}$

5. *To value a mixt Number*, Multiply the mixt Number by the Numerator, and divide by the Denominator. *Example*, viz.

l. s. d.

A Ship worth 794 - 11 - 9 what is $\frac{5}{8}$ worth?

5

8) 3972 - 18 - 9

facit 496 - 12 - 4 $\frac{1}{8}$

6. *To value a Decimal Fraction, expreſſing Coin*; every Prime or Unit in the firſt Place is 2 *s.* value, every 5 in the ſecond Place 1 *s.* and the reſt Farthings; but if they exceed $\frac{25}{1000}$, there muſt be one Farthing abated.

Reduce $\frac{7}{9}$ of a Pound into a Decimal Fraction.

9) ,700000

,77777

Here 7 Primes is 14 *s.* and 5 taken out of the ſecond place is 1 *s.* which makes 15 *s.* then 2 remains, which is 27. to the Thirds, or place of Farthings, out of which abate 1 for $\frac{25}{1000}$, it makes 15 *s.* 6*d.* $\frac{1}{2}$, which is the $\frac{7}{9}$ of a Pound Sterling.

7. *To reduce Vulgar Fractions to a common Denominator*, Multiply the Numerator of each Fraction into every Denominator, except its own, which makes that Product of a new Numerator; then multiply all the Denominators continually together, and that Product is 1 common Denominator to all the New Numerators. *Example*, viz.

l. *l.*

Reduce $\frac{2}{3}$ and $\frac{3}{4}$ to a Common Denominator.
Facit $\frac{8}{12}$ and $\frac{9}{12}$.

Here 12 is the Common Denominator to both the New Numerators, *viz.* 8 and 9, and you find that 8 is to 12, as 2 to 3, and 9 is to 12, as 3 to 4.

So that $\frac{8}{12}$ is to $\frac{2}{3}$, and $\frac{9}{12}$ to $\frac{3}{4}$.

Reduce $\frac{3}{4}$, and $\frac{5}{6}$, and $\frac{7}{8}$, of a *l.* to a *Com. Denom.*

```
 4 ————————————————
 6   18   40   42
——    8    4    4
24 ———— ———— ————
 8  144  160  168
————— ———— ————
192  192  192  162
```

To prove your Work, Divide your New Numerator by the Numerator of that Fraction, and Divide the Common Denominator of the Fraction by the Denominator, if both Quotients are equal, your Work is true.

Example. $\frac{144}{192}$, is $\frac{48}{48}$, here divided by 3, make 48, and 192 divided by 4, gives 48, which was to be proved. Or, you may prove your Work by Abbreviation of Fractions; but that is attended with much Difficulty, where 4 or more Fractioos are reduced to a Common Denominator.

Now this Reduction of Fractions is of little Uſe otherwiſe than to prepare a Fraction to be either Added, Subſtracted, Multiplied, or Divided.

As if the $\frac{3}{4}$ and $\frac{5}{6}$ and $\frac{7}{8}$ *l.* were to be added together, Reduce them firſt into a Common Denominator, as in the laſt Rule, it makes $\frac{144}{192}$ and $\frac{160}{192}$ and $\frac{168}{192}$. Add all the New Numerators together, make 472, which divided by 192, the Common Denominator, makes 2 *l.* $\frac{88}{192}$ as in the following Example.

Addition of Vulgar Fractions } 144
160
168

192) 472
2) 88 *Facit* 2 $\frac{88}{192}$, or 9 - 2
l. s. d.

And if the $\frac{3}{4}$ and $\frac{5}{6}$ and $\frac{7}{8}$ *l.* were to be added together in *Decimals*, reduce them firſt into *Decimal Fractions*, according to the Third Rule of this Chapter, and the Operation ſtands, *viz.*

0000

Addition of Decimals } $\frac{3}{4}$,75
$\frac{5}{6}$,8333
$\frac{7}{8}$,875

Say 4 in 30 is 7 times, and 4 in 20 is 5 times, and ſo for the reſt.

Facit 2 ,4583, or, 2 - 9 - 2
l. s. d.

By this Addition you ſee how much leſs Work is made by *Decimals* then is in Vulgar *Fractions*, and how eaſie their Value is found out according to the Sixth Rule of this Chapter.

8. *To reduce the Compound Fractions, or Fractions of a leſſer Name into the Fractions of a greater*; Multiply the Numerators together for a New Numerator, and the *Denominator* multiply together for a New *Denominator*.

Reduce $\frac{3}{4}$ of a Penny into the proper Fraction of a Pound Sterling.

Say, $\frac{3}{4}$ of $\frac{1}{12}$ of $\frac{1}{20}$, or $\frac{3}{4}$ of $\frac{1}{240}$, *facit* $\frac{3}{960}$.

9. *To reduce a mixt Number of a leſſer Name into the Fractions of a greater*; reduce the mixt Number into an improper Fraction, and work as before:

Reduce 3 *d.* $\frac{1}{2}$ into the proper Fraction of a Pound (Sterling.

$\frac{7}{2}$ of $\frac{1}{12}$ of $\frac{1}{20}$, or $\frac{7}{2}$ of $\frac{1}{240}$, *facit* $\frac{7}{480}$.

By the ſame Rule you may reduce any ſort of Weight or Meaſure.

For Compound Fractions, their Uſe is chiefly to bring Fractions of divers *Denominations* to one and the ſame *Denomination*.

As if the $\frac{3}{4}$ of a Penny, $\frac{2}{3}$ of a Shilling, and $\frac{7}{8}$ of a Pound were added together.

The $\frac{3}{4}$ of a Penny muſt be reduced into the Fractions of a Pound, and the $\frac{2}{3}$ of a Shilling, muſt be reduced into the Fraction of a Pound thus:

$\frac{3}{4}$ of $\frac{1}{240}$ *fac.* $\frac{3}{960}$
$\frac{2}{3}$ of $\frac{1}{20}$ *fac.* $\frac{2}{60}$

Then the Fractions to be added, are $\frac{3}{960}$, and $\frac{1}{60}$, and $\frac{8}{7}$, which reduce to a Common *Denominator*, and add them together, either by *Decimals* or Vulgar Fractions.

CHAP. XIX.

ADDITION *of* FRACTIONS.

I. IF *the fractions to be added have one Common Denominator*, Add all the Numerators together, and divide the Product by the Common *Denominator*.

Example. Add $\left\{\begin{matrix}\frac{8}{12}\\ \frac{5}{12}\\ \frac{7}{12}\end{matrix}\right\}$ of a Pound together.

12) 20

Facit 1 $\frac{8}{12}$

2. *If the Fractions to be added be of different Denominators,* Reduce them to a Common Denominator, according to the Seventh Rule of the laſt Chapter, and proceed as before.

Example. Add $\frac{7}{8}$ and $\frac{3}{4}$, and $\frac{2}{3}$ *l.* together.

8	—	—	8		84
4	28	24	8		72
—	3	3	—		64
32	—	—	$\frac{64}{96}$		
3	84	72		96)	220
—	—	—		—	—
96	96	96		*Facit*	2 $\frac{28}{96}$

To add $\frac{7}{8}$ and $\frac{3}{4}$, and $\frac{1}{4}$ *of Pound in Decimals,* Reduce them into Decimal Fractions, according to the Third Rule of the laſt Chapter, and add them up as in whole Numbers, keeping the Place of Units juſt under each other.

Add	$\frac{7}{8}$	,875					8)	7|000
	$\frac{3}{4}$	,75						,875
	$\frac{2}{3}$	,6666		*l.*	*s.*	*d.*		
		2,2916	*Facit*	2 -	5 -	10	4)	3000
								75
							3)	20000
								,6666

CHAP. XX.

Subtractions of Fractions.

I. TO Subtract Fractions of different Denominators Reduce them to a Common Denominator, and ſubſtract the leſſer Fraction from the greater.

Example. From $\frac{3}{4}$ *l.* take $\frac{2}{3}$ *l.* from $\frac{9}{12}$

$$\begin{array}{ccl} \overline{} & \overline{} & \text{take } \frac{8}{12} \\ 9 & 8 & \overline{} \\ & & \textit{Facit } \frac{1}{12} \end{array}$$

II. *If you have a mixt Number, (or Integer and Fraction) and the Fraction to be ſubtracted be greater than the Fraction from which you are to Subtract.*

Borrow an Integer from the mixt Number, and works as in the Subtraction of whole Numbers.

Exam. From $11\frac{2}{3}$ — $\frac{8}{12}$
$2\frac{3}{4}$ — $\frac{9}{12}$
to 2 is 3 $8\frac{11}{12}$

Here I cannot take $\frac{9}{12}$ out of $\frac{8}{12}$, therefore, I borrow an Integer, *viz.* 12, and ſay, 9 out of 12, reſt 3, to which add $\frac{8}{12}$, reſt $\frac{11}{12}$, and carry 1 to 2, is 3 *l.* out of 11 *l.* reſt 8, ſo the *Facit* is 8 $\frac{11}{12}$.

From 35 $\frac{3}{12}$ from 42
take 19 $\frac{7}{12}$ take 16 $\frac{15}{24}$
Facit 15 $\frac{8}{12}$ *Facit* 25 $\frac{9}{24}$

Subtraction of Decimals is the ſame as in whole Numbers, keeping the Places of Units juſt under each other of the Integers, and Primes under Primes of the Decimals, &c.

$$\begin{array}{llllr} & l. & & l. & s.\quad d \\ \text{From } \frac{7}{8} & ,875 & & \text{the } \frac{7}{8} \text{ is} & 17 - 6 \\ \text{Take } \frac{3}{4} & ,75 & & \frac{3}{4} \text{ is} & 15 - 0 \\ \hline \text{Rest} & ,125 \text{ or } 2 - 5 & & \text{Rest} & 2 - 6 \end{array}$$

Equal to the *Decimal*, 125.

CHAP. XXI.

Multiplication of Fractions.

I. TO *Multiply proper Fractions*, Multiply the Numerators together for a New Numerator, and the *Denominators* multiply together for a *Denominator*.

Example. Multiply $\frac{7}{8}$ by $\frac{3}{4}$, *facit* $\frac{21}{32}$.

II. *If a mixt Number and a Fraction are to be multiplied together*, reduce the mixt Number into an improper Fraction, and work as in the last.

Example. Multilpy $11\frac{2}{3}$ by $\frac{3}{4}$.

$\frac{35}{3}$ by $\frac{3}{4}$ *facit* $\frac{105}{12}$.

Example. Multiply $\overset{l.}{11\frac{2}{3}}$ by $\overset{l.}{2\frac{3}{4}}$

$\frac{35}{3}$ by $\frac{11}{4}$, *fac*. $\frac{385}{12}$ or $\overset{l.}{32}$, $\overset{s.}{1}$ - $\overset{d.}{8}$

III. *To multiply a Mixt Number by an Integer, make* the Integer an improper Fraction, by placing [1] under it, and reduce your mixt Number into an improper Fraction, and work as in the First Rule.

Example. Multiply 7 $\frac{5}{8}$ by 4

$\frac{61}{8}$ by $\frac{4}{1}$, *facit* $\frac{244}{8}$.

IV. *Multiplication of Decimals* is the ſame as in whole Numbers, ſaving as many *Decimal* Parts as are in the Multiplycand and Multiplier, ſo many muſt be cut off from the Product, which if it have not ſo many places, the *Defect* muſt be ſupply'd with Cyphers towards the Left-hand.

Multiply ,1005
by ,631

1005
3015

facit ,0031 155

11 ,83
2 ,87

8281
9464
2366

33 ,9521

CHAP. XXII.

DIVISION *of* FRACTIONS.

I. *To divide Single Fractions:* There is no need to reduce the Fractions to a common *Denominator*, (nor does the Author here) but Multiply the Numerator of a *Diviſor*, by the *Denominator* of the *Dividend*. And contrary for the Terms of the Quotient thus:

Example. Divide $\frac{7}{8}$ by $\frac{3}{4}$.

$\frac{3}{4}$) $\frac{7}{8}$ ($\frac{28}{24}$, or 1 $\frac{1}{6}$

l.   *l.*   *s.*   *d*

From $\frac{7}{8}$,875   the $\frac{7}{8}$ is——17 - 6

Take $\frac{3}{4}$,75 $\frac{3}{4}$ is——15 - 0

s.   *d.*

Reſt ,125 or 2 - 5   Reſt 2 - 6

Equal to the *Decimal*, 125.

CHAP. XXI.

Multiplication of Fractions.

I. TO *Multiply proper Fractions*, Multiply the Numerators together for a New Numerator, and the *Denominators* multiply together for a *Denominator*.

Example. Multiply $\frac{7}{8}$ by $\frac{3}{4}$, *facit* $\frac{21}{32}$.

II. *If a mixt Number and a Fraction are to be multiplied together*, reduce the mixt Number into an improper Fraction, and work as in the laſt.

Example. Multilpy 11 $\frac{2}{3}$ by $\frac{3}{4}$.

$\frac{35}{3}$ by $\frac{3}{4}$ *facit* $\frac{105}{12}$.

l.   *l.*

Example. Multiply 11 $\frac{2}{3}$ by 2 $\frac{3}{4}$

l.   *s.*   *d.*

$\frac{35}{3}$ by $\frac{11}{4}$, *fac.* $\frac{385}{12}$ or 32 - 1 - 8

III. *To multiply a Mixt Number by an Integer, make* the Integer an improper Fraction, by placing [1] under it, and reduce your mixt Number into an improper Fraction, and work as in the Firſt Rule.

Example. Multiply 7 $\frac{5}{8}$ by 4

$\frac{61}{8}$ by $\frac{4}{1}$, *facit* $\frac{244}{8}$.

IV. *Multiplication of Decimals* is the ſame as in whole Numbers, ſaving as many *Decimal* Parts as are in the Multiplycand and Multiplier, ſo many muſt be cut off from the Product, which if it have not ſo many places, the *Defect* muſt be ſupply'd with Cyphers towards the Left-hand.

Multiply	,1005	11 ,83
by	,631	2 ,87
	1005	8281
	3015	9464
		2366
facit	,0031 155	33 ,9521

CHAP. XXII.

DIVISION *of* FRACTIONS.

I. TO *divide Single Fractions:* There is no need to reduce the Fractions to a common *Denominator*, (nor does the Author here) but Multiply the Numerator of a *Diviſor*, by the *Denominator* of the *Dividend*. And contrary for the Terms of the Quotient thus:

Example. Divide $\frac{7}{8}$ by $\frac{3}{4}$.

$\frac{3}{4}$) $\frac{7}{8}$ ($\frac{28}{24}$, or 1 $\frac{1}{6}$

II. If it happens that the Fractions of the Diviſor be greater than the Fraction of the Dividend, the *Facit* of ſuch Diviſion is a Fraction.

Example. Divide $\frac{3}{4}$ by $\frac{7}{8}$.

$$\frac{7}{8})\ \frac{3}{4}\ (\frac{24}{28}$$

Facit $\frac{12}{14}$

III. *To divide an Integer by a Fraction,* Multiply the Integer into the Denominator, and divide by the Numerator.

Example. Divide 8 by $\frac{5}{8}$.

$$\frac{5}{8})\ \frac{8}{1}\ (\frac{48}{5}$$

$9\frac{3}{5}$ *Facit.*

IV. *To Divide a Fraction by an Integer,* place the Numbers as follows, and work as by the Firſt Rule.

Example. Divide $\frac{3}{4}$ by 3.

$$\frac{3}{1})\ \frac{3}{4}\ (\frac{3}{12}$$

Facit $\frac{1}{4}$

V. *To Divide a mixt Number by an Integer,* Reduce the mixt Number into an improper Fraction, whoſe *Denominator* multiply by the Integer for your *Diviſor.*

Divid

Divide $3\frac{3}{8}$ by 2

$\frac{2}{1}$) $\frac{27}{8}$ ($\frac{27}{16}$, or $1\frac{11}{16}$ *facit.*

VI. *To divide a mixt Number by a Fraction,* reduce the mixt Number into an improper Fraction, and work as before.

Example. Divide $3\frac{3}{4}$ by $\frac{4}{7}$

$\frac{4}{7}$) $\frac{15}{4}$ ($\frac{105}{16}$ *facit.* or $6\frac{9}{16}$.

VII. *To divide an Integer by a mixt Number,* reduce the mixt Number and Integer into improper Fractions, and proceed as before.

Example. Divide 5 by $3\frac{3}{5}$

$\frac{18}{5}$) $\frac{5}{1}$ ($\frac{25}{18}$ *facit.*
Or $1\frac{7}{18}$ *facit.*

VIII. *To divide a mixt Number by a mixt Number,* Reduce them into improper Fractions, and divide as before.

Example. Divide $3\frac{3}{5}$ by $2\frac{3}{4}$

Or $\frac{18}{5}$ by $\frac{11}{4}$
facit $\frac{72}{55}$ or $1\frac{17}{55}$

Diviſion of Decimals is the ſame as in whole Numbers, till the Work be done, and then uſe the the Converſe of the Rule for Multiplication, *viz.* ſo many Decimals as are in the Dividend, ſo many there muſt be in the Diviſor and Quotient: And if there be not ſo many, the Quotient muſt be ſupplied with Cyphers towards the Left-hand.

Example. Divide 33,9521 by 2,87

2,87) 525
2382
861
00

facit 11,83

See the Converſe in Multiplication of Decimals.

CHAP. XXIII.

The Rule of Three in Fractions.

RULE: You muſt multiply your Second and Third Numbers together, and divide by your Firſt.

Obſerving the ſame Method as in whole Numbers, *viz*. That the Firſt and Third Numbers be of one Name or Denomination.

d. ℔. l.

Example. If 3 $\frac{1}{2}$ buy $\frac{2}{3}$ of *Tobacco*, What ſhall 96 $\frac{3}{4}$ buy.

$\frac{7}{2}$ of $\frac{1}{240}$

l. ℔. l.

4 $\frac{7}{480}$ — $\frac{2}{3}$ — 95 $\frac{3}{4}$

4 by $\frac{2}{3}$

383

7 $\frac{66}{32}$

```
Divide 768/12 by 7/480
        7       768
      ----     -----
        84      2880
               2880
              3360
             ------
    84)       367680
                ..
              316
Facit 4377 lb    648
of Tobacco        600
                 -----
                   12
```

CHAP. XXIV.

Menſuration of Plain Superficies.

The Menſuration of Plain Superficies (or Flat Meaſure) *ſuch as Board, Glaſs, Wainſcot, Painting, and the like.*

Note 1. THat in Superficial Meaſure, 12 times 12 Inches, being 144 Inches, are the Number of Inches contained in a Square Foot of Superficial Meaſure.

2. That to ſquare any Number, is to multiply it n itſelf, as if you would know how many ſquare eet is contained in a Yard Square, multiply 3, the eet in one Yard by 3, the Product is 9, and ſo any Feet make a Yard Square.

H 2 *Example.*

Example. How many Square-Inches are there in a Yard Square?

1 Yard is 3 Feet.
12
———
36 Inches.
36
———
216
108
———
Facit 1296 Inches

General Rule is to multiply the Length by the Breadth, the Product is the Content.

Example. 1 A Board 12 Foot long, and 14 Inches broad, how many ſquare Feet?

12
———
144
14
———
576
144
———
144) 2016
Facit 14 Feet 576 *Facit* 14 *Square Feet.*
———
00

Example 2. A Piece of Wainſcot 24 Foot, 9 Inches long and 11 Foot deep, how many ſquare Yards?

Feet. Inch.
24 — 9
11 Mult.
9) 272 — 3

Yard. Feet. Inch.
Facit 30 - 2 - 3
Or 30 - 2 - $\frac{3}{12}$

Example 3. A Painter hath done a Room, 90 Foot about, and 11 $\frac{1}{2}$ Foot high, I demand the ſquare Yards therein?

Foot
11.5 High.
90 About.

9) 1035 (115 Yards for Anſwer
13
45

Note, This Way 'tis done much truer, and with 28 fewer Figures, and no Charge to the Memory.

Example. A Glaiſier hath done a Pane of Glaſs of 5 Foot, 73 high, and 2 Foot, 54 broad, at 6 *d.* the Foot ſquare.

Note, The Glaiſiers Foot divided into 10 Parts, and every part into 10 Parts more.

5, 73
5, 54
2292
2865
2865

Facit, Feet 31, 7442

A General Rule to Meaſure Round or Square Pillars.

Multiply the Length by the Circumference or Round Pillars.

And

And for Square Pillars, add the Sides or Breadth together, and multiply the Total by the Length.

Example 5. A Painter hath done a Pillar of 6 Foot 3 Inches Circumference, and 14 Foot 9 Inches long, I demand the Square Yards of Painting?

The common and beſt Way to do this, is by Croſs Multiplication thus,

Foot.	Inch.	
14	9	
6	3	
3 - 8	3	
88 - 6		

Facit, *Foot* 92 - 2 - 3 *Anſwer*.
Or *Yards* 10 - 2 - 3

By multiplying 9 by 3, gives 2 Foot 3, put down the 3, and carry 2, 3 times 14 is 42, and 2 is 44, which is 3 Foot 8, which put down as you ſee,

Then 6 times 9 is 54, which is 4 Foot 6, put 6 under the 8, (as being 12ths of a Foot as the 8 is) then 6 times 14 is 84, and 4 is 88. So the Sum of the two Lines is 92 Foot 2′ - 3″. Or the Feet divided by 9, is 10 Yards 2 Foot, 2 Primes (or 12th of a Foot) and 3 Seconds, or 12ths of a 12th.

The ſame is done Decimally thus:

```
         14, 75 Foot.
          6, 25
        ---------
          7375
         2950
        8850
      -----------
     9) 92, 1875
Or Yards 10 - 2, 1875 Foot.
```

For Regular *Polygons*, add all the Sides together, and multiply the Total by half the neareſt Diſtance from the Center, to one of the Sides.

For *Cones*, multiply half the Length by the Circumference.

For *Pyramids*, add all the Breadth at the Baſe together, and multiply half the Length by the Total.

For *Globes*, multiply the Area of the greateſt Circle by 4, it gives the Content.

CHAP. XXV.

Menſuration of Solids.

Solids; *ſuch as* Stone, Timber, &c. *are Meaſured by the* Cubick *or* Solid *Foot*; *Now a Cube is a Figure like a Dye of 6 equal Sides, and a* Cubick *Foot contains* 12 *Inches Square on every Side.*

THe Rule is, Multiply the Length by the Breadth, and that Product multiply by the Depth, which divide by 1728, the Cubick Inches in a Foot Solid.

Example.

A Piece of Timber 16 Foot long, 14 Inches broad, and 9 Inches deep, how many ſolid Feet doth it contain?

```
           12                  16
           12                  12
          ----                ----
          144                 192
           12                  14
          ----                ----
         1728                 768
                             192
                             ----
                             2688
                                9
                             ----
             1728)           24192 facit 14 Foot.
             -----            6912
               14             ----
                               000
```

Example.

A Stone 7 Foot 3 Inches long, 4 Foot 5 Inches broad, and 2 Foot 3 Inches deep, How many ſolid Feet?

```
         7—3            4—5           2—3
         12             12            12
       ————           ————          ————
         87 length      53            27
         53 breadth
       ————
length  261
       435
       ————
      4611                   1728)  124497
        27 deep             ————     3537
       ————                Facit 72  ————
      32277                ſolid Feet   81
       9222                         ———— reſts
       ————                           1728
 facit 124497 Cubick Inches.      Or 6'' - 9'''
```

But the Way moſt uſed, and which is ſhorter and moſt like an Artiſt, is this:

```
            Feet,   Inch.
              4  -  5 broad
              2  -  3 deep.
           ————————
              1  -  1 - 3
              8  - 10 —
           ————————
              9  - 11 - 3
              7  -  3 — long.
           ————————
          2  -  5  -  9 - 9
         69  -  6  -  9
         ————————
 facit Foot 72 —  -  6 - 9
```

Only carrying 12's, both in your Multiplication and Addition.

To find how many Inches in length make a Solid foot of Timber, } multiply the Number of Inches ſquare in it ſelf for Diviſor, and make 1728, the Cubical Inch of a Foot, your Dividend.

Example.

A Piece of Timber 18 Inches ſquare, What length will it require to make a Foot Solid?

1834

```
             18
             18
            ----
            144
             18
        ---------
       324) 1728
 facit 5 Inc. 108
```

Example.

How many Inches in length will make a Foot at 12 Inches Square?

```
          12
          12
        -----
     144) 1728
  -----    288
 facit 12 In--
            00
```

CHAP. XXVI.

Plank MEASURE.

A Table ſhewing how many Foot make a Load of Plank of any thickneſs.

Inch thick	Foot to the load	Inch thick	Foot to the load
1	600	5	120
$1\frac{1}{2}$	400	$5\frac{1}{2}$	109.0912
2	300	6	100
$2\frac{1}{2}$	240	$6\frac{1}{2}$	92.076
3	200	7	85.714
$3\frac{1}{2}$	171.428	$7\frac{1}{2}$	80
4	150	8	75
$4\frac{1}{2}$	133.33	$8\frac{1}{2}$	70.588

The Way to make this Table, or to know how many Foot of Plank make a Load of any thickneſs.

Rule. Say if 12 Inch thick, require 50 Foot to make a Load: What will 4 Inch thick require: This by the Reverſe Rule of 3 gives 150, as you ſee by the Operation.

12. 50. 4
12

4) 600 (150 Foot for Anſwer.

So that if you divide 600 by any thickneſs of Plank, the Quotient ſheweth how many Feet thereof make a Load,

2 *Exam.* If it were required to know how many Load are in 5762 Foot of Plank 5 Inches thick.

By the Table 120 Foot make a Load; therefore divide 5762 by 120, and the Quote is Loads.

120) 5762 ($48\frac{2}{120}$ or $\frac{1}{60}$ Loads.

Or Multiply the Feet given by 144, and that product by the Thickneſs of the Plank, then divide by 1728 the Inches in a ſolid Foot, and that Quote is Feet, which divide by 50 the Feet in a Load, and you have the Loads without the Table.

5762
144
829728
5
1728) 4148640 (2400 (48 $\frac{1}{60}$ Load.
6926 50)
1440

Note, The Remainer $\frac{1440}{1728}$ is equal to $\frac{5}{6}$ Foot, and $\frac{5}{6}$ of $\frac{1}{50}$ is equal to $\frac{1}{60}$ of a Load as above.

Exam. 3. In 1234 Foot of 4 Inch Plank, how many Load and ſolid Feet.

150) 1234 (8 Load.
3) 34 (11 Solid feet.

For the ſolid Feet, divide the Remainer by the Number of 50's contained in the Diviſor; or by the Times that the Thickneſs of the Plunk is found in 12 as above.

Alſo, if the laſt Example were done by the ſecond Rule, under the ſecond Example, 1234 multiplied by 144, gives 177696, and that by 4 Inches thick; 710784, which divided by 1728, the Quote is 411 Foot, or 8 Load (dividing by 50) and 11 Foot, as in the laſt Rule and Example.

3*dly*, To know how many Feet of Plank of any Thickneſs make a Tun. Say by the Inverſe Rule of Three, as 12 to 40, ſo the Thickneſs to the Anſwer.

12. 40. 4
12

4) 480 (120 Feet in the Tun.

And ſo may you make a Table of the Feet of any Thickneſs in a Tun (as is before ſhewed for the Load) by only dividing the 480, by the Thickneſs of the Plank.

So in Thickneſs	Foot make a Tun.
of 1 Inch	480
2	240
3	160
4	120
5	96
6	80, &c.

FINIS.

Finis

Ann Pennyken Bo

1790

Decber [illegible] 179

Decber the 1 8th [illegible]

years of age & [illegible]

year of 1790 Ann Peny

A Short and Eaſy METHOD;
After which SHOP-KEEPERS MAY *State*, *Poſt*, and *Balance* THEIR BOOKS of ACCOMPTS.

By Charles Snell, *VVriting-Maſter, and Accomptant*, in
Foſter-Lane, *London*.

With whom Young Gentlemen
may Board.

A Short and Eaſy METHOD; *after which* Shop-keepers, *may* State, Poſt, *and* Balance *their* Books *of* Accompts.

INSTRUCTIONS.

Queſt. WHAT is the firſt Thing I muſt do, who deſign to keep my Books of Accompts after this Method?

Anſw. You muſt make an Inventory; an *Example* of which is at the End of theſe *Inſtructions.*

Q. How muſt I poſt the Firſt Part of this Inventory?

A. You muſt poſt it on your Poſting-Book, *viz.*

Merchandize, to the Debit of that Accompt.

Caſh, to the *Debit* of your Caſh-Book.

George Mattock's Debt, to Debit of his Accompt.

Germain Bazin's Debt, to his Debit alſo.

And for the whole Sum (*viz.* 730 l.) you muſt give Counterpart in *Credit* of Stock.

Q. How muſt I poſt the other Part of this Inventory?

A. To the Credit of *Tho. Roberts*, the Sum you owe him.

To the Credit of *John Field*, the Sum you owe him.

And for the whole Sum, (*viz.* 110 l.) you muſt debit Stock. See the ſeveral Accompts, *Fol.* 1, 2.

Q. I ſee by the 1ſt Page of the Day Book, that it contains Entries of Goods ſold to ſundry Perſons: How muſt theſe be poſted?

A. To debit of *Rich. Hunt*, what ſold him.

To debit of *Anthony Coccart*, the like.

To debit of *J. Graves* and Company, the like.

To debit of *Rich. Hunt*, the like. See their Accompts, Fol. 3. of the Ledger.

And Counterpart muſt be given for the whole Sum of this Page (*viz.* 16 l. 10 s. 10 d.) on Credit of Merchandize in the ſaid Poſting-Book. See Accompt of Merchandize, Fol. 1. Ledger.

And the like muſt be done for the Page 2, 3, 4, 5 and 6 of the ſaid Day-Book.

Note, That the Ready Money taken for Goods ſold, is poſted each Month to the debit of your Caſh-Book. See the Caſh-Book.

Q. How muſt I enter the Monies I receive (of Debtors on my Ledger?)

A. On the debit Side of your Caſh-Book. See that Book.

Q. How muſt I poſt thoſe Sums received, into my Poſting-Book?

A. To the Credit of the Perſons, of whom received. See the Accompts of

Richard Hunt, —— ——Fol. 3.
Anthony Coccart, —— —— Fol. 3.
John Graves, and Company Fol. 3.
Tho. Woodman, —— —— Fol. 3.
Henry Taft, —— —— —Fol. 4.

Q. How muſt I poſt (into my Poſting-Book) the Total Receipts of the Month of *Auguſt* (*viz.* 57 *l.* 3 s. 10 d.

A. You muſt poſt that Total, to the debit of your Caſh, in your Poſting-Book, writing,

To *Sunderies*. Received *per* Caſh-Book. See the Accompt of Caſh, in the Poſting-Book, Fol. 1.

Do the like for *September* and *October*'s Receipts.

Q. How muſt I enter the Monies I pay to thoſe I owe to, and who have Credit in my Poſting-Book?

A. On the Credit-ſide of your Caſh-Book. See the Caſh-Book.

Q. How muſt I poſt thoſe Sums paid?

A. To the Debits of the Perſons to whom paid. See the Accompts of *Thomas Roberts*, Fol. 2. and *John Field*, Fol. 2. in your Poſting-Book.

Q. How muſt I poſt (into my Poſting-Book) the Total Payments of the Month of *Auguſt* (*viz*. 30 l.)?

A. You muſt poſt it to the Credit of your Caſh, in your Poſting-Book, writing,

By *Sundries*, paid *per* Caſh-Book. See the Accompt of Caſh in your Poſt-Book, Fol. 1.

Q. I underſtand by theſe Directions, how to State and Poſt my Books, How muſt I proceed in Balancing my Poſting-Book?

A. Value your Merchandize remaining unſold, and enter the Sum of their Value on Credit of the Accompt of Merchandize, in your Poſting-Book See the Accompt of Merchandize, Fol. 1.

And give Counterpart in debit of the Accompt of Balance in the ſaid Poſting-Book. See the debit of Balance, Fol. 4.

Which done, ſubtract the debit Side of ſaid Account of Merchandize from its Credit, and place the Remainder (*viz*. 97 l. 10 s.) on the debit Side of it. See the Accompt, Fol. 1.

And give Counterpart on Credit of Profit and Loſs in the ſaid Poſting-Book. See Accompt of Profit and Loſs, Fol. 4.

Then add up Debtor and Creditor of the Accompt of Caſh in the ſaid Poſting-Book, and ſubtract the

Credit from the Debit, and place the Caſh remaining (*viz.* 297 l 7 s. 1 d. on Credit of the ſaid Accompt of Caſh. See the Accompt, Fol. 1. and give Counterpart in Debit of the Accompt of Balance. See ſaid Accompt of Balance, Fol. 4.

Q. How muſt I do with the Accompt of Expences?

A. Write on its Credit-ſide (the 32 l.) by Profit and Loſs, and give Counterpart in Debits of the Accompt of Profit and Loſs. See both the Accompts, Fol. 2, 4.

Q. How muſt I do with the Accompt of *George Mattock*, who I find (by his Accompt) owes me 10 *l.*

A. You muſt write on Credit of his Accompt.

By Balance, now owing to me 10 l.

And give Counterpart on Debit of Balance. See both the Accompts, Fol. 2 and 4.

Do in the ſame manner by the Accompts of

Germain Bazin ——— Fol. 2.
Richard Hunt ——— Fol. 3.
John Graves and Company Fol. 3.
And *Thomas Woodman*—— Fol. 3.

See their Particular Accompts in your Poſting-Book.

Q. How muſt I do with the Accompt of *Thomas Roberts*, to whom I find I owe 20 l.

A. You muſt write on the Debit of his Accompt.

To Balance, now due to him 20 l.

And give Counterpart on Credit of Balance. See both the Accompts, Fol. 2, 4.

Do the like with the Accompt of *John Field.* See his Accompt, Fol. 2.

Q. How muſt I do to Balance, or Cloſe, the Accompts of Stock, Profit, and Loſs?

A. Subtract the Debit or Profit and Loſs from its Credit, and ſet the Remainder (*viz.* 65 l. 10 s. being your clear Gains during the Time of this Trade) on the Debit of Profit and Loſs. See the Accompt Fol. 4.

And give Counterpart in Credit of Stock. See Accompts of Stock, Fol. 1.

Q. How muſt I do to Balance the Accompt of Stock?

A. Subtract its Debit from its Credit, and ſet the Remainder (*viz.* 685 l. 10 s. being your preſent Net Stock) on the debit of Stock. See the Accompt, Fol. 1.

And give Counterpart in Credit of Balance. See Accompt of Balance, Fol. 4.

This done, your Poſt-Book is Balanced, and the Accompt of Balance (if you have proceeded right) will be equal on both Sides.

The

The INVENTORY.

London, Auguſt 1, 1723.

I Have in Merchandize of ſundry Sorts, to the Value of		*l.* 520 - 00 - 00
In Caſh, or ready Money		*l.* 180 - 00 - 00
Owing to me, by		
Richard Mattock		*l.* 20 - 00 - 00
Germin Bazin		*l.* 10 - 00 - 00
		l. 730 - 00 - 00
Owing by me, to		
Thomas Roberts	*l.* 60 - 00 - 00	
John Field	*l.* 50 - 00 - 00	
		l. 110 - 00 - 00
My Net Stock		*l.* 620 - 00 - 00

May 21

A
BOOK
OF
Receipts and *Payments*,
Otherwiſe called
CASH-BOOK.

1.

	Receipts — Debtor.		l.	s.	d.
	August, 1723.				
1	To Stock by Inventory —	1	180	—	—
8	*Richard Hunt*, of him —	3	4	—	—
12	*Anthony Coccart*, ditto — —	3	3	6	06
16	*John Graves* and Comp. ditto —	3	1	10	06
20	*Thomas Woodman*, ditto —	3	4	13	—
30	*Henry Taft* — ditto — —	4	0	15	—
pt. 31	Merchandize ſince 1ſt *August* —	—	42	18	10
	l. 57 - 03 - 10 - Received.	—	237	03	10
	September, 1722.				
	Laſt Balance	—	207	03	10
11	*Richard Hunt*, of him — —	3	8	15	11
—	*Anthony Coccart*, ditto	3	3	—	—
15	*George Mattock*, ditto — —	2	10	—	—
20	*Germain Bazin*, ditto —	2	5	—	—
24	*Henry Taft* — —	4	2	06	—
30	*John Graves* and Comp. ditto —	3	2	—	03
pt. —	Merchandize ſince 1ſt *Sept.* — —	—	38	06	06
	l. 69 - 18 - 08 Received.	—	276	12	06

	I. Payments —— Creditor		l.	s.	d.
	Auguſt, 1723.				
23	By *Tho. Roberts*, to him	2	20	—	—
31	*John Field* — ditto	2	10	—	—
	Paid this Month.		30	—	—
	Reſting *per* Balance		207	03	10
			237	03	10
	September, 1723.				
22	*John Field* — to him	2	5	—	—
28	*Thomas Roberts*, ditto	2	10	—	—
	Paid this Month		15	—	—
	Reſting *per Balance*		261	12	06
			276	12	06

			l.	s.	d.
	2. Receipts —— Debtor.				
	October, 1723.				
	Laſt balance	—	261	12	06
11	To *Anthony Coeccart*, of him ——	3	2	—	—
20	*John Bird* —— ditto —— ——	4	2	18	—
31	*John Graves* and Comp. ditto—	3	5	15	03
—	Merchandize ſince 1ſt *Octob.* ——	—	86	11	04
	l. 97 - 04 - 07 Received	—	358	17	01
	November, 1723.				
	Laſt balance	—	296	17	01

2.
Payments — Creditor.

October, 1723.

			l.	s.	d.
15	By *Thomas Roberts*, to him —	2	10	—	—
28	*John Field* — ditto	2	20	—	—
31	Expences, &c. ſince 1 *Auguſt* —	2	32	—	—
	Paid this Month --	—	62	—	—
	Reſting *per* balance	—	296	17	01
		—	358	17	01

November, 1723.

A
DAY-BOOK,
Otherwiſe call'd
JOURNAL,

	Day-Book 1.	l.	s.	d.
	Accompts Debtor to Merchandize Sold.			
	Auguſt 1. 1723.			
3.	*Richard Hunt,*			
	39 ½ Ells Linen, at —— ——s. 3 - 2	6	05	01
	—— —— ditto —— —— ——			
3.	*Anthony Coccart,*			
	58 ½ Ells of Linen, at —— s. 2 - 4	6	16	06
	—— —— —— ditto 5.—— —— ——			
3.	*John Graves* and Comp.			
	3 doz. Sciſſors, at 4. 0. l. 0 - 12 - -			
	3 doz. ditto —— 3. 9. l. 0 - 11 - 3			
	6 doz. round points 3. 9. l. 1 - 02 - 6			
	6 doz. middling— 2. 8. l. 0 - 16 - -			
	——————	3	01	09
	—— —— — ditto 10. —— —— ——			
3.	*Richard Hunt,*			
	3 Maſſes of Pearl, at —— l. 0 - 2 - 6	0	07	06
	Merchandize ſold—	16	10	10

	Day-Book 2.	l.	s.	d.
	Accompts Debtor to Merchandize.			
	Sold.			
	Auguſt 17, 1723.			
4.	*Thomas Woodman,*			
	22 doz. Sciſſors — 4. 3. l. 4 - 13 - 6			
	6 doz. middling — 4. 3. l. 1 - 05 - 6			
	9 doz. ditto — 2. 8. l. 1 - 04 - 0			
	20 doz. ſmall — 1. 6. l. 1 - 10 - -			
		8	13	—
	ditto 20.			
3.	*Anthony Coccart,*			
	1 Looking-glaſs — l. 0 - 08 - 6			
	1 ditto middling — l. 0 - 09 - 6			
	3 Tortoiſe-ſhell Combs — l. 0 - 06 - 0			
		1	04	—
4.	ditto 23.			
	Henry Taft,			
	1 doz. Sciſſ. with Caſes — l. 0 - 09 - 6			
	1 doz. without Caſes — l. 0 - 05 - 6			
		0	15	—
	Merchandize ſold —	10	12	—

Day-Book 3.

		l.	s.	d.
	Accompts Debtor to Merchandize.			
	Sold.			
	August, 27. 1723.			
3.	*Richard Hunt*,			
	3 Pair Sciſ. half barb.—l. 0 - 06 - -			
	1 doz ditto, ſmall ſett -- l. 0 - 05 --			
	2 Knives at 20 d. ——l. 0 - 03 - 4			
	1 doz. Comb-bruſhes— l. 0 - 03 - --			
	6 Pen knives at 8 d. — l. 0 - 04 - --			
	12 doz. Claſp-knives — l. 1 - 17 - -			
	24 doz. Kniv. horn Hand. l. 3 - —— -			
		5	18	4
	ditto 31.			
1.	Receipts in ready Money for Goods ſince the 1ſt of *August*	42	18	10
	September 3. 1723.			
4.	*Henry Taft*,			
	A parcel of Sciſſors, at	0	12	—
	Merchandize ſold—	49	09	02

	Day-Book 4.	l.	s.	d.
	Accompts Debtor to Merchandize.			
	Sold.			
	September 6. 1723.			
3.	*Richard Hunt,*			
	2 Maſſes Pearl, at ——— s. 2 - 6	0	05	—
	——— ditto 11. ———			
3.	*Richard Hunt,*			
	13 Ells Cloth, at —— —— s. 2 - 6	1	12	06
	——— ditto 15. ———			
3.	*Anthony Coccart,*			
	4 Maſſes Pearl, —2. 6. l. 0 - 10 —			
	1 ½ doz. Pendants— 4. 0. l. 0 - 06 —			
	——— ditto 16. ———	0	16	—
3.	*Henry Taft,*			
	12 doz. Horn-trumpets 2. l. 1 - 04 —			
	2 doz. Comb-bruſhes 3. l. 0 - 06 —			
	2 doz. ditto —— —— 2. l. 0 - 04 —			
		1	14	—
1.	Merchandize ſold ——	4	07	06

Day-

Day-Book 5.

	l.	s.	d.
Accompts Debtor to Merchandize.			
Sold.			
September 30, 1723.			
4. *John Bird*,			
3 Maſſ. Ven. Pearl, at l. 1 - 00 —			
2 doz. Sciſſors, at — l. 0 - 09 —			
3 doz. fine Combs, at l. 1 - 09 —			
	2	18	—
——— ditto ———			
3. *John Graves* and Comp.			
1 Piece white Gauſe qt. 24 Ells.			
1 Piece — ditto — 22			
1 Piece — ditto — 20			
1 Piece — ditto — 18			
1 Piece yellow, ditto — 20			
1 Piece black, ditto — 19			
Ells — 123 at 21 d.	10	15	03
Merchandize ſold —	13	13	03

Anne Berry
Wm Borne

	Day-Book 6.	l.	s.	d
	Accompts Debtor to Merchandize.			
	Sold.			
	September 30. 1723.			
1.	Receipts in ready Money for Goods ſince the 1ſt of *September* —— —	38	6	6
	October 2. 1723.			
3.	*Thomas Woodman,*			
	1 doz. Sciſ. Caſes, at — l. 0 - 12 —			
	4 Maſs Pearl, at 2 s. 0 d. l. 0 - 08 —			
	9 Maſs, ditto, at —— l. 3 - 17 - 4			
		4	17	4
	ditto 29.			
3.	*Thomas Woodman,*			
	2 Pieces Tabby, qt. 61 Ells —— 8 s. 6 d. } l. 25 - 18 - 6			
	1 Piece, ditto, qt. 28 Ells, —— 8 s. 6 d. } l. 11 - 18 - 0			
		37	16	6
	ditto 31.			
2.	Receipts in ready Money for Goods ſince the firſt of *October* —— —	86	11	4
	Merchandize ſold—	168	01	8

A
POSTING-BOOK,
Otherwiſe call'd
LEDGER.

ALPHABET.

B.	
Bazin, Germain	2.
Bird, John	4.
Balance	4.
C.	
Coccart, Anthony	3.
Caſh	1.
E.	
Expenc. and Abatem.	2.
F.	
Field, John	2.
G.	
Graves, John & Comp.	3.
H.	
Hunt, Richard	3.
M.	
Merchandize	1.
Mattock, George	2.
P.	
Profit and Loſs	4.
R.	
Receipt and paym. caſh	1.
Roberts, Thomas	2.
S.	
Stock	1.
T.	
Taft, Henry	4.
W.	
Woodman, Thomas	3

Poſting-

Posting-Book 1.

				l.	*s.*	*d.*
1723		Stock —— Debtor.				
Aug.	2	To sundry to whom I owe—		110	—	—
Oct.	31	To Balance N. Stock	4	685	11	—
				795	11	—
1723		Merchandize, Debtor.				
Aug.	1	To Stock, *per* Inventory —	1	520	—	—
Octo.	31	To *P.* and *L.* carried thither—	4	97	10	—
				617	10	—
1723		Receipts, or Cash Debtor.				
Aug.	1	To Stock, money *per* Inven.—	1	180	—	—
	31	To Sund *per* Book, Page 1 —		57	03	10
Sept.	30	To Sundries ——— 1 —		69	18	08
Octo.	31	To Sundries ——— 2 —		97	04	07
				404	07	01

Posting-

		Poſting-Book 1.		l.	s.	d.
1723		Stock —— Creditor.				
Aug.	13	By Sun. *per* Inventory——	—	730	—	—
Octo.		By Pro. & loſs, gain'd in 3 mo.	04	65	11	—
			—	795	11	—
1723		Merchandize, Creditor.				
Aug.	10	By Sun. ſold, Day-book 1—	—	16	10	10
	23	By Sundries — page —— 2—	—	10	12	—
Sept.	3	By Sundries —— —— 3—	—	49	09	02
	16	By Sundries —— —— 4—	—	4	07	06
	30	By Sundries —— ——5—	—	13	13	03
Octob.	31	By Sundries —— ——6—	—	168	01	08
			—	262	14	05
		By bal. value of Remains—	4	354	15	07
			—	617	10	—
1723		Payments, or Caſh-Creditor.				
Aug.	31	By Sundries *per* book—— 1—	—	30	—	—
Sept.	30	By Sund.——page —— 1—	—	15	—	—
Octo.	31	By Sund. ——page—— 1—	—	62	—	—
			—	107	—	—
		By Balance, reſt in Caſh ——	4	297	07	01
			—	404	07	01

Poſting-Book 2.

				l.	s.	d.
		Expences, &c. Debtor.				
1723 *Octo.*	3	To Paym. hereon ſince 1 *Aug.*	1	31	19	
		George Mattock, Debtor.				
1723 *Aug.*	1	To Stock, now owing me —	1	20	—	—
		Germain Bazin, Debtor.				
1723 *Aug.*	1	To Stock, now due to me —	1	10	—	
		Thomas Roberts, Debtor.				
1723 *Aug.*	23	To Payment, to him ———	1	20		—
Sept.	28	To ditto ———	1	10		
Octo.	25	To ditto ———	1	10		
			—	40		
		To Bal. now due to him—	4	20		
			—	60		
		John Field, Debtor.				
1723 *Aug.*	31	To Payment, to him ———	1	10		
Sept.	23	To ditto ———	1	5		
Octo.	28	To ditto ———	1	20		
			—	35		
		To bal. now owing him—	4	15		
			—	50	—	—

Posting-Book 2.

				l.	s.	d.
1723		Expences, &c. Creditor.				
Octob.	31	By *P.* and *L.* carried there —	4	31	19	
1723		*George Mattock*, Creditor.				
Sept.	15	By Receipt of him — —	1	10		
Octob.	31	By bal. now owing me—	4	10		
				20		
1723		*Germain Bazin*, Creditor.				
Sept.	20	By Receipt of him —	1	5		
Octob.	31	By balance, now owing me—	4	5		
				10		
1723		*Thomas Roberts*, Creditor				
Aug.	1	By Stock, now owing him—	1	60		
1723		*John Field*, Creditor.				
Aug.	1	By Stock now due to him —	1	50		

Posting-

Posting-Book 3.

				l.	*s.*	*d.*
1723		*Richard Hunt*, Debtor.				
Aug.	1	To Merchand. ſold him	1	6	05	01
	10	To ditto	1	0	07	06
	27	To ditto, a Parcel	1	5	18	04
Sept.	6	To ditto, 2 Maſs. Pearl	1	0	05	—
	11	To ditto, 14 Ells Clo. at 2*s.* 6*d.*	1	1	12	06
				14	08	05
1723		*Anthony Coccart*, Debtor.				
Aug.	5	To Merch. ſold him	1	6	16	06
	20	To ditto, a Parcel	1	1	04	—
Sept.	15	To ditto, a Parcel	1	0	16	—
				8	16	06
1723		*John Graves*, and Comp. debt.				
Aug.	5	To Merch. a Parcel	1	3	01	09
Sept.	30	To ditto, a Parcel	1	10	15	03
				13	17	—
1723		*Thomas Woodman*, Debtor.				
Aug.	17	To Merch. a Parcel	1	8	13	—
Octob.	2	To ditto, a Parcel	1	4	17	04
	29	To ditto, a Parcel	1	37	16	06
				51	06	10

Poſting-

		Posting-Book 3.		*l.*	*s.*	*d.*
1723		*Richard Hunt*, Creditor.				
Aug.	8	By Receipt of him	1	4	—	—
Sept.	11	By ditto	1	8	15	11
			—	12	15	11
1723		By bal. now owing me	4	1	12	06
			—	14	08	05
1723		*Anthony Coccart*, Creditor.				
Aug.	12	By Receipt of him	1	3	06	06
Sept.	11	By ditto	1	3	—	—
Octob	11	By ditto	1	2	—	—
		Ballance	—	—	10	—
			—	8	16	06
1723		*John Graves*, and Cp. Creditor.				
Aug.	16	By Receipt of them	1	1	10	06
Sept.	30	By ditto	1	2	—	03
Octob	31	By ditto	1	5	15	03
			—	9	06	—
		By bal. now owing me	4	4	11	—
			—	13	17	—
1723		*Thomas Woodman*, Creditor.				
Aug.	20	By Receipt of him	1	4	13	—
Octob	31	By balance, now owing me	4	46	13	10
			—	51	06	10

Posting-

		Poſting-Book 4.		*l.*	*s.*	*d.*
1723		*Henry Taft*, Debtor.				
Aug.	23	To Merch. a Parcel	1	0	15	—
Sept.	3	To ditto, a Parcel	1	0	12	—
	16	To ditto, a Parcel	1	1	14	—
			—	3	01	—
1723		*John Bird* — Debtor.				
Sept.	30	To Merch. a Parcel	1	2	18	—
1723		Profit and Loſs — debtor.				
Octob	31	To Expences, *&c.* brought here	2	31	19	—
	—	To Stock, gain'd ſince 1 *Aug.*	1	65	11	—
			—	97	10	—
1723		Bilance — debtor.				
Octob	31	To merch. now remaining	1	354	16	07
	—	To Receipts, or Caſh reſting	1	297	07	01
	—	To *Geo. Mattock*, now owing	2	10	—	—
	—	To *Germain Bazin*, ditto	2	5	—	—
	—	To *Rich. Hunt*, ditto	3	1	12	06
	—	To *John Graves* and Com. dit.	3	4	11	—
	—	To *Thomas Woodman*, ditto	3	46	13	10
	—	To *Antho. Coccart*, ditto	3	—	10	—
			—	720	11	—

Poſting-

		Poſting-Book 4.		*l.*	*s*	*d:*
		Henry Taft, Creditor.				
1723 *Aug.*	30	By Receipt of him ———	1	9	15	—
Sept.	24	By ditto in full———	1	2	06	—
				3	01	—
1723		*John Bird* —— Creditor.				
Octob	20	By Receipt in full —— ——	1	2	18	—
1723		Profit and Loſs — Creditor.				
Octob	31	By merch. to cloſe that Acco.	1	97	10	—
1723		Balance —— Creditor.				
Octob	31	By *Thomas Roberts*, I owe him	2	20	—	—
—		By *John Field*, ditto——— —	2	15	—	—
				35	—	—
		By Stock, for its Neat — —	1	685	11	—
				720	11	—

INSTRUCTION.

Queſt. HAving taught me how to State, Poſt, and balance my books; what method muſt I uſe at the going out of theſe books into others?

Anſw. From the balance of theſe books, (ſee Poſting-book Fol. 4.) you muſt draw out another Inventory, as follows:

The INVENTORY.

London, October 31, 1723.

I Have in merchandize of ſundry Sorts, to the Value of--	l.	354 - 16 - 07
In Caſh, or ready money——	l.	297 - 07 - 01

Owing to me, by

George Mattock—— —— ——	l.	20 - 00 - 00
Germain Bazin———— ——	l.	5 - 00 - 00
Richard Hunt——— —— ——	l.	7 - 12 - 06
John Graves and Comp.—— —	l.	4 - 11 - 00
Thomas Woodman—— —— ——	l.	46 - 13 - 10
Anthony Coccart— ————	l.	00 - 10 - 00
	l.	720 - 11 - 00

Owing by me, to

Thomas Roberts	l.	20 - 00 - 00
John Field ——	l.	15 : 00 - 00
—— ————	l.	35 - 00 - 00
My Net Stock——	l.	685 - 11 - 00

And Poſt it into your New-poſting-book, as by the directions given for the Poſting your other Inventory.

Q. In the Caſh-book on Debtor-ſide, (for Inſtance, in the Month of *Auguſt*) are figures juſt before the money-lines, as 1 before 180 *l.* and 3 before 4 *l.* &c. I deſire to know what thoſe figures ſhew?

A. The figure 1 (before 180 l. in the firſt Line) ſhews the folio of the Poſting-book, on which the Accompt of Stock ſtands.

The figure 3 following *Richard Hunt*, in the next Line, ſhews the folio of the Poſting-book, whereon the Accompt of *Richard Hunt* ſtands.

The like is to be underſtood of the figure 3 following *Anthony Coccart*: The 3 following *John Graves* and Company. The 3 following *Thomas Woodman*: And the 4 following *Henry Taft*, on Debtor-ſide of ſaid Caſh-book for the month of *Auguſt*, and of thoſe on Debtor-ſide, of the ſaid book for the months of *September* and *October*.

Q. What do the Figures (on the Creditor-ſide of ſaid Caſh-book) which come juſt before the money Lines ſhew? For Inſtance, in the month of *Auguſt* on Creditors-ſide, of the figure 2 following *Thomas Roberts*, juſt before the 20 *l.* and the 2 following *John Field*, juſt before 10 *l.*

A. The figure 2 following *Thomas Roberts*, ſhews that his Accompt ſtands in Poſting-book, fol. 2. And the 2 following *John Field*, ſhews that his Accompt ſtands alſo in ſaid Book, folio 2.

The like is to be underſtood of the figures 2. 2. on Creditor-ſide of the Caſh-book for *September*.

And of the figures 2. 2. 2. on Creditor-ſide of the Caſh-book for *October*.

Q. What does the Sum *l.* 57 - 03 - 10, at the foot of the Debtor-ſide of the Caſh-book for the month of *Auguſt*, ſhew?

A. It ſhews the Total Sum received during the month of *Auguſt*, and is produced by ſubtracting the 180 *l.* in the firſt Line, from the *l.* 237 - 03 - 10 on the Debtor of that Accompt.

The like is to be underſtood of the *l.* 69 - 14 - 08 at the Foot of *September*, and of the *l.* 97 - 08 - 07 at the foot of *October*.

And as thoſe Sums ſhew the total Receipt during each Month, ſo the Sum 30 *l.* on Credit ſide of the Caſh-book for *Auguſt* the Sum 15 *l.* for *September*, and the Sum 62 *l.* for *October*, ſhew the total Payment during each of thoſe Months.

Q. How is the balance (or reſt of Money) in Caſh, found?

A. You muſt ſubtract the 30 *l.* (on Credit of *Auguſt*'s Caſh book) from the *l.* 237 : 03 : 10 on the Debit-ſide, and the Remainder being *l.* 207 : 03 : 10 is the balance or reſt of Money, in Caſh, which placed under the 30 *l.* paid, and added to it, makes a juſt balance with the Debtor-ſide. See the Caſh-book for the Month of *Aug.*

You are to do in the like manner to find the balance, or reſts of Caſh for the Month of *September* and *October*. See the Caſh-book for both thoſe Months.

Q. What does the Figure 3 againſt *Richard Hunt*, (in the Day-book) and the 3 againſt *Anthony Coccart*, and the other Figures in the Margin of the Day book, ſhew?

A. They ſhew the Folio's (of the Poſting-book) whereon the Accompts of *Richard Hunt*, *Anthony Coccart*, and the other Accompts ſtand.

And alſo ſhew that thoſe Perſons or Accompts are Debtors; as the Figure 1 under the ſmall Line of the Margin, and at the Foot of each Page of the Day-book, juſt againſt the Words Merchandize ſold ſhews that the Accompt of Merchandize ſtands in Poſting book, on Fol 1. and is Creditor.

Q. What do the Figures (in the Poſting book) coming juſt before the Money Lines on Debtor-ſide, ſhew?

A. As the Words of each Line on Debtor ſide of ſaid Poſting book, immediately following the Word, to ſhews what Accompts or Perſons are to be credited, or counterparted, ſo thoſe Figures ſhew on what Folio's in the Poſting-book thoſe Accompts, or Perſons are to be found

Q. What do the Figures come juſt before the Money Lines and Creditor-ſide of the Poſting Book ſhew?

A. As the Words in each Line on Creditors-ſide of ſaid Poſting book, immediately following the Word *By*, ſhews what Accompts, or Perſons are to be debited or counterparted; ſo thoſe Figures ſhew on what Folio's in the Poſting book thoſe Accompts or Perſons are to be found.

Q. How muſt I Enter the Goods that I buy.

A. You muſt enter them in a Bought book; as for Inſtance.

Merchandize Debtor to Perſons.

Bought,

Of (ſuppoſe) *John Thompſon, viz.*

46 Ells Linen, at 3 *s.* per Ell	*l.* 6 - 18 - 00
52 Ells, ditto, at 4 *s.* per Ell	*l.* 10 - 08 - 00
	l. 17 - 06 - 00

This Article (and others of a like Nature) muſt poſted in your Poſting-book, to the Credit of the ompt of the Perſon of whom bought. Here *John* *mpſon*, and the total of each Page of your Bought ook, muſt be poſted in ſaid Poſting-book to the Debi of Accompt of Merchandize.

Q. I have been told, that a good Method of Book-keeping will ſhew to the Owner of the Books, or others concerned, theſe following neceſſary (and many other) Particulars, *viz.*

Concerning Merchandize.

Nº 1. What Goods (during the whole, or any Time of the Accompt) have been bought, brought into Charge, when, of whom, and at what Prizes.

2. What Goods (as above) have been ſold, iſſued out of the Charge, when, to whom, and at what Prizes.

3. The whole Quantity bought and ſold, and the Profit, or Loſs, ariſing on thoſe ſo diſpoſed of.

Concerning Caſh or Money.

4. What Sums of Money have been received (as above) when, of whom, and on whoſe Accompt; alſo whether in part or in full.

5. What Sums of Money have been paid (as above) when, to whom, and on whoſe Accompt. Alſo whether in part or in full.

6. What Sum Total has been received and paid (during the whole, or during any Time as above) and conſequently the Sum reſting in Caſh.

Concerning Perſons with whom I deal.

7. For what Sums they ſtand indebted, from what Dates, and for what.

8. For what Sums I ſtand indebted to them, from what Dates, and for what.

9. Whether any balance, or Remainder, be due fro m to me, or from me to them, and what Sum.

Concerning my Expences:

10. What Expence I have been at (during the Tim the Accompt, or any part of it) and ſuch Expenc nſider'd and allow'd, then what Neat Gain, or Lo s attended.

Concerning my Stock.

11. What Stock I began with, and what my preſe ock is, and what particulars compoſed each.

Now I deſire you to ſhew me how this Method ſwer all theſe particulars?

A. Concerning Merchandize, Your Bought-book, ew you the particular Demands of Num. 1.

And your Day-book, thoſe in Numb. 2.

The Debtor ſide of Accompt of Merchandize in your ſting-book, will ſhew the whole Quantity bought, d its Creditor-ſide, the whole Quantity ſold, and e ſame Accompt ſhews you alſo the Profit and Loſs ariſing on thoſe you have diſpoſed of: See the Accompt of Merchandize in Poſting book, Fol. 1. Thus the Demands Numb. 3. are ſhewn.

Concerning Caſh or Money, The Debtor-ſide of yo Caſh-Book anſwers the Demands in Numb. 4. and the Creditor-ſide of the ſaid Books ſhews the Demands in Numb. 5. and conſequently thoſe in Numb. 6. by comparing the Debtor and Creditor ſides.

The Creditor-ſide alſo of the ſaid Book, ſhews the Balance (or Reſt that ſhould be found) in Caſh.

Concerning Perſons with whom you deal. The Debtor-ſides of their Accompts ſhew the Demands of Numb. 7. and the Creditor-ſides thoſe of Numb. 8.

And conſequently their accompts compared in Debtor and Creditor, ſhews the Demands of Numb. 9

Concerning your Expences. The accompt of Expences in your Poſting-book ſhews the Expences, as in Numb. 10. and the accompt of Profit and Loſs, will ſhew the Neat-gain or Loſs.

Concerning your Stock. The accompt of Stock in your Poſting-book ſhews that you began with, and the accompt of Balance ſhews your preſent Stock, and of what Particular it conſiſts; and anſwers the Demands in Numb. 11.

FINIS.